

**Mandarin Derived Nominals with Argument Structure**

YANG, Jing

A Thesis Submitted in Partial Fulfillment

of the Requirements for the Degree of

Master of Philosophy

in

Linguistics

The Chinese University of Hong Kong

January 2013



Thesis/ Assessment Committee

Professor LEE Hun Tak Thomas (Chair)

Professor GU Yang (Thesis Supervisor)

Professor CHEUNG Chi Hang Candice (Committee Member)

Professor LIU Feng-hsi (External Examiner)



Abstract of thesis entitled: Mandarin Derived Nominals with Argument Structure  
Submitted by YANG, Jing  
for the degree of Master of Philosophy  
at The Chinese University of Hong Kong in January 2013

### **Abstract**

The thesis aims at accounting for the realization of word category and argument structure in a type of Mandarin derived nominals. The properties of Mandarin derived nominals are attributed to functional projections, showing that it is syntactic structures rather than lexical information that determine word category and argument structure.

The crucial data are derived nominals with argument structure, namely “AS-nominals.” The analysis of Mandarin AS-nominals supports the view that the arguments of AS-nominals are introduced by vP (e.g., Marantz 1997). The novel observation is that while English AS-nominals can be derived from verbs denoting both telic and atelic events, Mandarin AS-nominals are exclusively based on verbs denoting telic events. The contrast of the AS-nominals in the two languages lies in two factors: the availability of classifiers and the type of verbal projection to be nominalized. As Mandarin is a classifier (Cl) language, there are both Cl and v projections in Mandarin AS-nominals. As telic events are inherently countable, verbs denoting telic events can combine with classifiers and form AS-nominals in Mandarin. Since English is not a classifier language, there is no Cl in English AS-nominals; thus, there is no boundedness/telicity requirement for v. Consequently, verbs denoting both telic and atelic events can form AS-nominals in English. Moreover, the nominalizing morpheme in Mandarin AS-nominals selects a minimal verbal projection (a VP with only the innermost argument and the verb). This accounts for our observation that Mandarin AS-nominals involve only the internal argument of the verb.

The analysis above also indicates that the head noun of AS-nominals is nominalized from a verb in syntax. In other words, word category is derived in syntax rather than stored as lexical information. The study of Mandarin derived nominals exemplifies the role of syntax in the construction of meaning, which is traditionally attributed to lexical information, including word category and argument structure.

## 論文提要

本論文考察漢語普通話中一種特殊的名詞化短語 (derived nominal)，旨在解釋其中心語的詞類和論元結構的形成機制。本文的研究表明，詞類和論元結構不是儲存於詞庫中的詞彙信息，而是在句法中衍生，由句法結構決定的。

與本文研究關係最緊密的是帶有論元結構的名詞化短語。前人的研究(如 Marantz 1997) 认为，論元結構由動詞投射決定，故有論元結構的名詞化短語中包含動詞短語投射 **vP**。本文的研究支持這一觀點。本文發現，英語中有論元結構的名詞化短語，既可以由表達有終點事件 (telic) 的動詞形成，也可以由表達無自然終點事件 (atelic) 的動詞形成，但是普通話只允許前者。這一差別可歸結於兩個原因：普通話是量詞型語言 (classifier language)，而英語不是；普通話中被名詞化的結構不同。普通話名詞短語中有 **Cl(assifier)** 投射。有終點的事件本身是可數的，所以，普通話中表示有終點的動詞能形成帶有論元結構的名詞化短語。英語不是量詞型語言，無 **Cl** 投射，所以英語帶有論元結構的名詞化短語不要求動詞表達的事件有終點。因此，英語中表達事件有無終點的動詞都可以形成有論元結構的名詞化短語。普通話和英語的對比支持名詞化短語中存在 **vP** 投射。此外，普通話中被名詞化的動詞投射只包括動詞和動詞的內論元，這可以解釋為什麼普通話帶有論元結構的名詞化短語只有一個論元。

上文所述的分析，同時表明帶有論元結構的名詞化短語中，其（語義上的）中心語是由動詞在句法中經由名詞化得來的。由此看出，詞類是句法衍生的，而不是在詞庫中決定的。本文對普通話名詞化短語的研究表明，句法決定詞類和論元結構。

## Acknowledgements

The completion of this thesis is due to support from many people. I would like to offer special thanks to some of them here.

As my supervisor, Professor Yang Gu has provided me with all kinds of help and guidance. I learned about teaching skills by working as her TA and about academic writing from her comments on my papers and thesis. I am extremely grateful for her offering me a Research Assistant position for the past year. I thank Professor Thomas Lee and Professor Candice Cheung for their help on my thesis and on my other research projects such as the acquisition of classifiers and the syntax of Cantonese noun phrases. Their suggestions are indispensable to the development of my research. Professor Feng-hsi Liu's insightful comments on my thesis lead to substantial improvement.

During my study for the MPhil degree, I benefited greatly from the active academic community in Hong Kong. For example, courses taught by the following professors enriched my linguistic knowledge and broadened my horizon: Candice Cheung, Lawrence Cheung, Shengli Feng, James Huang, Ping Jiang, Thomas Lee, Peggy Mok, Haihua Pan, Sze-Wing Tang, Liejiong Xu, and Yang Gu. The other professors at my department also offered me support of various kinds. They are Professor Baoning Fu, Professor Donovan Grose, Professor Gladys Tang, Professor Virginia Yip, and Professor Yanhui Zhang.

No researcher is an island. Many professors are kind enough to discuss noun phrase structure with me through email correspondence: Marcel den Dikken, Richard Larson, Paul Law, Audrey Li, Yafei Li, Jonah Lin, Andrew Simpson, and Joanna Sio. In addition, I received inspiring comments from the following scholars and professors during conferences or personal communications: Jingqi Fu, Chris Kennedy, Schola Lam, Waltred Paul, Dingxu Shi, Rint Sybesma, Shou-Hsin Teng, Satoshi Tomioka, and Foong Ha Yap.

Some portions of this study were developed from the materials presented in various local and international conferences, including the Fifth International Conference on Formal Linguistics, the 6th International Conference on Contemporary Chinese Grammar, the 19th Annual Conference of the International Association of Chinese Linguistics, the Symposium on the Attributive Particle in

Chinese Dialects, and the Annual Research Forum of the Linguistic Society of Hong Kong. Some of these conference trips were funded by the CUHK Postgraduate Student Grants for Overseas Academic Activities (2011) and the Departmental Funding Support to Linguistics Postgraduate Research (December 2011). Most importantly, my first two years at Hong Kong had been supported by the Postgraduate Studentship from the Hong Kong Government.

I would also like to express my gratitude to the administrative staff in the department for their generous assistance: Gloria Poon, Peggy Ng, Manna Wong, Kinson Lee, Yvonne Lee, Michael Cheng, Chris Cheung, and Yeung Yim Bing.

Friendships are priceless. It is lucky for me to have Jess Law, Haoze Li, Jiahui Yang, and Xin Zu on my “thesis-revision team.” The others who have given me help and support include Xiangjun Deng, Margaret Lei, Jia He, Shan Wang, Jie Guo, Zhen Qin, Kelly Shum, Bo Xu, Donghui Zuo, Hui Chen, Yiyuan Chen, Boji Lam, Aishu Chen, Caicai Zhang, Xinyuan Shi, Zhuang Wu, Cat Fung, Natsumi Shibata, Aijun Huang, Wen Jiang, Jun Zhang, Lei He, and many others.

However much I treasure my time studying linguistics, I will never forget my years at the English Department of Peking University. It was the professors there that guided me towards linguistics: Yihong Gao, Wei He, Wangqi Jiang, and Jun Qian. Most of my time as an undergraduate student was spent on exploring the beauty of literature and on gaining a deeper understanding of humanities. It is a florescent memory that shines forever.

Last but not least, I express my gratitude to my parents and my husband for their unconditional love and support.



## Table of Contents

Abstract.....	i
論文提要.....	ii
Acknowledgement.....	iii
Table of Contents.....	v
List of Abbreviations.....	vi
Chapter 1 Introduction.....	1
1.1 Theoretical background.....	2
1.2 Research objectives.....	10
1.3 Organization of the thesis.....	14
Chapter 2 Different approaches to derived nominals.....	16
2.1 Transformationalist approach.....	17
2.2 Lexicalist approach.....	20
2.2.1 Chomsky (1970).....	20
2.2.2 Inflection and derivation.....	26
2.2.3 Grimshaw (1990).....	28
2.3 Syntactic approach.....	33
2.3.1 Underlying VPs.....	33
2.3.2 The structure of English derived nominals and gerundive nominals.....	35
2.3.3 Boundedness in the nominal and verbal domain.....	45
2.4 Summary.....	55
Chapter 3 Derived nominals in Mandarin.....	57
3.1 Observation and generalization.....	58
3.1.1 Preliminary observation of Mandarin derived nominals.....	60
3.1.2 The derived NOUN.....	65
3.1.3 The argument structure of derived nominals.....	71
3.2 Mandarin AS-nominals cast in the lexicalist approach.....	81
3.3 Mandarin AS-nominals cast in the syntactic approach.....	85
3.3.1 Fu (1994).....	85
3.3.2 Simpson (2002).....	92
3.3.3 Mandarin de as a determiner.....	96
3.4 Conclusion.....	107
Chapter 4 The structure of Mandarin derived nominals.....	109
4.1 Mandarin derived nominals in the DM framework.....	110
4.1.1 Mandarin classifiers.....	110
4.1.2 The underlying VP.....	114
4.1.3 Mandarin AS-nominals.....	117
4.1.4 simple event nominals and result nominals.....	126
4.1.5 Psych nouns.....	129
4.2 Counterevidence to our proposal.....	131
4.2.1 Events and facts.....	133
4.2.2 Mandarin gerundive nominals and event-denotation.....	135
4.3 Summary.....	138
Chapter 5 Conclusion.....	140
Bibliography.....	150

---

## List of Abbreviations

AS	Argument Structure
ASP	Aspect
Cl	the Classifier head in syntactic structure
CL	Classifier
CP	Complementizer Phrase
D	Determiner
DM	Distributed Morphology
DP	Determiner Phrase
LCA	Linear Correspondence Axiom
LF	Logical Form
LP	Lexical Phrase
LRS	Lexical Relational Structure
N	Noun
NP	Noun Phrase
PF	Phonological Form
PP	Preposition Phrase
Spec	Specifier
TP	Tense Phrase
VP	Verb Phrase

## Chapter 1 Introduction

Crosslinguistically, derived nominals are regarded by some scholars as “nominal structures derived from other syntactic categories by means of derivational affixes” (Rozwadowska 2006; see also Chomsky 1970, Lees 1960, among others). For instance, the English noun *destruction* in (1) can be perceived as being morphologically related to the verb *destroy* in (2).

- (1) the enemy’s destruction of the city
- (2) The enemy destroyed the city.

Derived nominals have attracted much attention because of their mixed nominal and verbal properties (e.g., Borer 2003, Chomsky 1970, Grimshaw 1990, Lees 1960, Marantz 1997). In (1), the noun *destruction* appears to have verb-like properties in that it takes arguments (*the enemy* and *the city*) of its verbal counterpart *destroy*. Thematically speaking, in both (1) and (2), *the enemy* is the Agent of the act of destruction and *the city* is the Theme. The nominal property of *destruction* is most obviously exemplified by the nominal suffix *-tion*. In a word, the derived noun *destruction* is a noun with verbal behaviors like argument-taking ability. Derived nominals thus pose questions to the significance of noun-verb distinction, an important aspect of which is viewing argument structure as a verbal property. In other words, derived nominals concern two related issues: word category and argument structure.

In this chapter, we introduce the theoretical background of the study of derived nominals in Section 1.1, discuss the interesting properties of Mandarin

derived nominals and state our research objectives in Section 1.2, and lay out the organization of the thesis in Section 1.3.

### 1.1 Theoretical background

The investigation into derived nominals can be traced back to the study of language by philosophers such as Russell (1904), concerning whether derived nominals and their corresponding sentences have the same denotation. In the generative paradigm, derived nominals have been a focus of research since Lees (1960), who aimed at accounting for the structural relation between derived nominals and sentences. Currently, there are two approaches to derived nominals concerning the issues of word category and argument structure: the lexicalist approach (e.g., Chomsky 1970) and the syntactic approach (e.g., Borer 2003, Halle and Marantz 1993, Pesetsky 1995). For the former, noun-verb distinction is significant, because it determines syntactic projections. For instance, *destroy* is specified as a verb and *destruction* as a noun in the lexicon. When they enter syntax, *destroy* projects a VP and *destruction* projects an NP. Further syntactic projections are based on the VP and NP, respectively. For example, TP can be projected over VP but not NP; DP can be projected over NP but not VP.<sup>1</sup> For the syntactic approach, word category is derived in syntax and it does not determine syntactic structures (e.g., Halle and Marantz 1993, Pesetsky 1995). Take *destruction* and *destroy* for example. They are derived in syntax based on more elementary lexical items (see Section 2.3 on category-neutral Roots). The syntactic structures that the elementary lexical items appear in determine their word category (see Section 2.3 for more discussion).

---

<sup>1</sup> This requirement has been loosened in the study of nominalization even in the lexicalist approach to derived nominals. For example, based on data from Modern Hebrew and other languages, Siloni (1997) proposes that DP can be projected over VP (in a type of nominalization different from derived nominals). This reflects the weakening of the importance of noun-verb distinction in determining syntactic structures.

Both the lexicalist and the syntactic approaches treat argument structure as primarily a verbal property. Conceptually, the lexical information of a verb contains a theta grid on the thematic relation of the verb and its theta-roles (Williams 1981). “Thematic relation” is a semantic notion (Jackendoff 1972); it reflects the lexical conceptual relation between a verb and the participants of the event depicted by the verb. Thematic roles or theta-roles such as Agent and Theme reflect the role a participant plays in the event or state depicted by the sentence.<sup>2</sup> For instance, in *John broke the window*, John performed an action and thus he was the agent; the Agent theta-role of the verb *break* is assigned to *John*. Syntactically, an argument is a noun phrase that bears a theta-role (Chomsky 1981).

The central question in the study of argument structure is how lexical information on theta-roles is mapped onto argument positions in syntax; that is, how the argument structure of the verb is realized in syntax. Based on the study of Fillmore (1968) and Gruber (1965), it is argued that the hierarchy of theta-roles (see (3)) determines the grammatical function of noun phrases (Baker 1988, Grimshaw 1990, Jackendoff 1972, Larson 1988).

### (3) Thematic hierarchy

Agent > Experiencer > Goal/Source/Location > Theme

The thematic role higher in the hierarchy is more prominent than the one lower in the hierarchy. For instance, Agent is more prominent than Theme. Among syntactic argument positions, the subject position is more prominent than the object position.

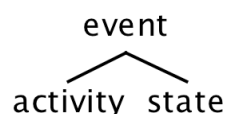
---

<sup>2</sup> “Thematic role” is a syntactic notion; an argument can only have one thematic role (according to the Theta Criterion of Chomsky 1981). “Thematic relation” is a semantic notion (Jackendoff 1972); it is the relation between a noun phrase and the predicate. An noun phrase may bear more than one thematic relation. For instance, in *John gave Mary a book*, *John* bears both the agent and the source thematic relations with the predicate.

Theta-roles map onto syntactic argument positions according to prominence (Baker 1988, Perlmutter 1983). Take *John broke the window* for example. John is the agent and the window is the theme in the event the sentence depicts; *John* bears the Agent theta-role and *the window* bears the Theme theta-role. *John* is more prominent than *the window* in terms of thematic hierarchy; thus *John* is realized as the subject, while *the window* is the object. This approach to argument realization assumes that the thematic hierarchy is a kind of linguistic knowledge that regulates which theta-role is assigned to which syntactic argument position.

However, Grimshaw's (1990) study reveals that the thematic hierarchy alone does not determine argument realization; instead, the thematic hierarchy interacts with event structure. Event structure (Pustejovsky 1988, 1991) breaks down events into subparts like activity and state (see (4)). Take *x establishes y* for example. It is analyzed as an activity in which *x* engages in an activity of establishment plus a resulting state in which existence is predicated of *y*.

(4)



The relation of event structure and argument structure is exemplified by psychological verbs. Take *scare* and *love* for example. Both of them have the argument structure of (y (x)), where *y* is the Experiencer and *x* is the Theme; *y* is higher than *x* in the thematic hierarchy (see (3)). But *y* occupies different argument

positions in sentences. As shown below, y is realized as the object for *scare* in (5) but as the subject for *love* in (6).

(5) x scares y.

(6) y loves x.

The reason is due to the difference in the event structures of *scare* and *love*. For *scare*, x is a participant in the causing event, which is more prominent than the resultant state in event structure.<sup>3</sup> According to Grimshaw (1990), it is the prominence in the event structure (rather than the prominence of thematic roles, as previously assumed) that determines which argument is realized as the subject (Gu 1994). Since x is a participant in the causing event of *scare*, it is the subject for *scare*. As to *love*, y is more prominent than x in the event structure (as well as in argument structure) and thus is realized as the subject.

Grimshaw's (1990) study reveals that argument structure is a matter of mapping from lexical information onto syntactic structures. Lexical conceptual information on events and participants is mapped onto a hierarchical argument structure, which interacts with event structure to determine the realization of arguments in syntax. In other words, argument structure is an independent level of representation that plays a role at the interface between the lexicon and syntax.

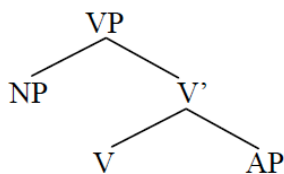
The importance of event structure in determining argument realization has been demonstrated in Grimshaw's (1990) proposal discussed above. Hale and Keyser (1993) further argue that neither theta-roles nor the thematic hierarchy are

---

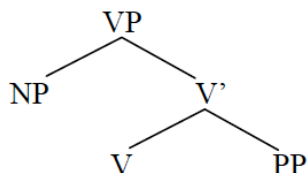
<sup>3</sup> The concept of "prominence" in the thematic hierarchy and event structure both involves the meaning of "most obvious" or "first to be perceived." In the thematic hierarchy, to be prominent is to appear first in the hierarchy. In event structure, the more prominent event is the one that happens first. For instance, a causing event happens earlier than an resulting event/state; hence, the former is more prominent than the latter in event structure.

linguistic primitives; instead, they are both derived from syntactic representations of event structure.<sup>4</sup> Hale and Keyser (1993) propose that a lexical word has a Lexical Relational Structure (LRS), which is based on the four lexical categories, V (verb), N (noun), A (adjective), and P (preposition). These categories correspond to the four fundamental notional types: event, entity, state, and interrelation, respectively. There are four basic LRSs for verbs, in which the relation between the V and its complement translates to semantic “implication.” For instance, for the LRS based on A in (7) and P in (8), the AP and the PP express a state and an interrelation, respectively. Semantically, such structures translate into an event implicating a state or an interrelation. In other words, they describe an event resulting in a state or an interrelation. The NP is therefore understood as the Theme, for it is the entity that undergoes a change of state or comes to be involved in an interrelation.

(7)



(8)



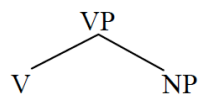

---

<sup>4</sup> Hale and Keyser (1993) consider such structures as “syntactic” not because they are formed in syntax but because they follow mechanisms that apply to syntax, such as the X-bar theory (Chomsky 1970, 1981). We view such lexical-syntactic structures as a transition from the pure lexicalist account to the pure syntactic account of argument structure.

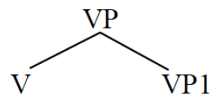


Hale and Keyser (1993) assume that VP and NP are not predicates and do not force the projection of the specifier position; thus the LRS based on V and N are VPs without specifiers. The LRS in (9) means an event implicating the existence of an entity. The LRS in (10) means an event implicates the happening of another event (the VP1).

(9)

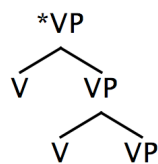


(10)



Such an assumption aims at explaining the limitation on recursion in LRS representation and ultimately the limitation on the number of theta-roles. Since theta-roles are defined by structural relations in the LRS, if the number of possible LRSs were unlimited, there would be unlimited number of theta-roles. For example, the assumption on recursion forbids the formation of LRSs like (11), which is intended to mean that an event causes another event, which further causes a third event.

(11)



(Hale and Keyser 1993:80 (47))

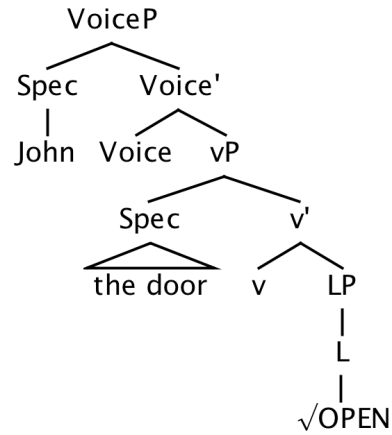
The consequence of Hale and Keyser's (1990) assumption (i.e., the LRSs based on N and V do not project specifiers) is that the Agent theta-role is not part of the LRS. The subjects of the verb types in (9) and (10) are external to the LRSs and is projected in syntax in a clausal context. The relation between these subjects and the VP in (9) and (10) is interpreted as Agent.

In essence, Hale and Keyser (1990) uses the syntactic representation of event structure to derive theta-roles and the thematic hierarchy. We have shown that the two basic theta-roles, Agent and Theme, are defined by syntactic structural relations. The Agent is realized in the more prominent argument position (i.e., the subject in a clause) than the Theme because it is external to the LRS of the verb. Thus, the thematic hierarchy is no longer needed to account for the grammatical functions of arguments. The downside of Hale and Keyser's (1993) analysis is that it creates burden on the lexicon as it would impose computational requirement on the lexicon to work "syntactically."

From Grimshaw (1990) to Hale and Keyser (1993), we see a tendency to abandon the view that argument structure is determined by the semantic knowledge and hence has a linkage with the lexicon. Their research opens up the possibility of viewing argument structure as derivable from syntactic structures. Hale and Keyser's (1993) analysis invoke a question: if LRSs are represented by syntactic structures, why are they not formed in syntax (see also Hale and Keyser 2002)?

The syntactic approach to argument structure (e.g., Borer 2003, Halle and Marantz 1993, Pesetsky 1995) argues that the position an argument occupies in the syntactic structure in syntax proper (not in the lexicon as in Hale and Keyser 1993) determines its theta-role. The tree diagram in (12) illustrates the basic structure of *John opened the door* (irrelevant details aside) (Alexiadou 2001, Marantz 1997).

(12)



In the tree diagram above,  $\sqrt{\text{OPEN}}$  is a Root, which is category-neutral.<sup>5</sup> A Root projects a head “L” (standing for “Lexical”) and forms an “LP,” providing lexical information for syntactic structures. In (12), the Root  $\sqrt{\text{OPEN}}$  describes a state (comparable to the AP of Hale and Keyser 1990 in (7)). The vP structure (comparable to the VP selecting AP in (7)) means that an entity (i.e., the door) undergoes a change of state (i.e., become open). Voice introduces the external argument (Kratzer 1996), which is *John* in (12).<sup>6</sup> As the specifier of VoiceP, *John* refers to the entity that brings about the change of state for the door; hence, *John* is interpreted as the Agent. In this way, the event type (eventuality) computed by syntax introduces arguments and determines the theta-roles of arguments. Consequently, no mapping mechanism between theta-roles and argument positions

<sup>5</sup> The notation “ $\sqrt{\phantom{x}}$ ” was first used in Pesetsky (1995). The capitalization of the Roots (following Marantz 1997) intends to emphasize that they are not the traditional “root” nor “word.” More information on Roots is provided in Section 2.3. For the discussion in Chapter 1, it suffices to understand Roots as words without word category, which is to be determined by functional projections such as v in (12). In other words, Roots are category-neutral and are categorized by functional projections (Embick and Noyer 2007).

<sup>6</sup> The Voice head is labeled “v” by Chomsky (1995) and “v-1” by Marantz (1997). We use “Voice” to distinguish it from the lower v.

is needed, for the position an argument occupies determines its theta-role (Spec, vP is Theme and Spec, VoiceP is Agent).

In short, the lexicalist approach views argument structure as a realization of lexical information in syntactic structures; the projection of arguments are determined by the lexical information of the verb. The syntactic approach argues that argument structure is a syntactic notion and it is determined by functional projections, such as VoiceP and vP in (12). The evaluation of the two approaches should be based on their explanatory power of empirical data. Derived nominals provide an ideal testing ground due to their mixed nominal and verbal properties; that is, in derived nominals, nouns seem to have argument structure. Mandarin Chinese (henceforth, Mandarin) provides an interesting set of data on derived nominals, which we present in the next section.

## 1.2 Research objectives

This thesis aims at identifying an approach to resolve the issues on word category and argument structure realization related to Mandarin derived nominals. Mandarin derived nominals are noun phrases with such heads as those underscored in (13) and (14). Intuitively, the proper names *Zhangsan* and *Lisi* in (13) and *zhe ben shu* ‘this book’ in (14) preceding the heads seem to be the respective arguments of the two head nouns *diaocha* ‘investigation’ and *chuban* ‘publication’. The argument structures and thematic relationships are comparable to their clausal counterparts in (15) and (16), respectively. Apparently, *Zhangsan* is the agent and *Lisi* is the theme of an investigation in (13) and (15); *zhe ben shu* is the theme of a publication in (14) and (16).

- (13) Zhangsan dui Lisi de diaocha  
 Zhangsan DUI Lisi DE investigation  
 ‘Zhangsan’s investigation of Lisi’
- (14) zhe ben shu de chuban  
 this CL book DE publication  
 ‘the publication of this book’
- (15) Zhangsan diaocha-le Lisi.  
 Zhangsan investigate-ASP Lisi  
 ‘Zhangsan has investigated Lisi.’
- (16) Zhe ben shu chuban-le.  
 this CL book publish-ASP  
 ‘The book has been published.’

Due to the similarities between the noun phrases and their clausal counterparts in (13) to (16), it is natural to consider that they have certain derivational correspondence. Following previous studies (e.g., Fu 1994), we refer to nouns like *diaocha* ‘investigation’ and *chuban* ‘publication’ as “derived nouns” and the noun phrases in (13) and (14) as “derived nominals.”<sup>7</sup>

Mandarin derived nominals exhibit complicated and puzzling patterns. First of all, Mandarin has no rich morphological markings for nouns and verbs. For instance, the noun *diaocha* ‘investigation’ and the verb *diaocha* ‘investigate’ share the same phonological form. Consequently, while it is obvious that the English derived noun *investigation* is derived from *investigate*, it is not easy to decide whether it is so in Mandarin as there is no overt morphology to mark the distinction.

---

<sup>7</sup> We are going to discuss whether *diaocha* ‘investigation’ in (13) and *chuban* ‘publication’ in (14) are nouns or not in Section 3.1.2.

Secondly, the behavior of arguments in derived nominals is different in Mandarin and English. For example, the English derived noun *translation* may have one or two arguments in its noun phrase, as shown by (17) and (18), respectively (derived nominals are boldfaced). The English derived nominal in (17) does not have a grammatical correspondence in Mandarin (see (19)), but the derived nominal in (18) do (see (20)). The examples in (20) and (21) illustrate that the Mandarin verb *fanyi* ‘translate’ and the English verb *translate* are both transitive verbs requiring two arguments.

(17) **His translation of the book** took two days.

(18) **The translation of the book** took two days.

(19) \*Ta dui zhe ben shu de fanyi yong-le liang tian  
 he DUI this CL book DE translation cost-ASP two day

(20) Zhe ben shu de fanyi yong-le liang tian  
 this CL book DE translation cost-ASP two day  
 ‘The translation of the book took two days.’

(21) Ta fanyi-le zhe ben shu.  
 he translate-ASP this CL book  
 ‘He translated the book.’

(22) \*Zhe ben shu fanyi-le.  
 this CL book translate-ASP  
 \* ‘This book translated.’

The difference of argument-taking properties illustrated above deserves attention. We discuss this difference in detail in Chapter 3 and argue in Chapter 4 that the

difference is accountable by structural differences between English and Mandarin derived nominals.

Moreover, we consider that a special property of Mandarin derived nominals has not received enough attention in previous studies. Fu (1994) reports the data as shown in (23). She considers that the internal argument *zaiqing* ‘disaster’ is marginally omissible, as indicated by the two question marks.

(23) **Ta ??(dui zaiqing) de baodao** jinxing-le san ge xiaoshi.

he DUI disaster DE report go.on-ASP three CL hour

‘His reporting of the disaster went on for three hours.’

(Fu 1994: 71 (46))

Fu (1994) claims that the internal argument in (23) is obligatory. But we find that it is optional, as shown in (24). The discrepancy of the data in (23) and (24) adds one task to our research: clarification of data on Mandarin derived nominals.

(24) ta (dui zaiqing) de chixubuduan de baodao

he DUI disaster DE constant DE report

‘his constant reporting of the disaster’

Furthermore, in the English counterpart of (24), the internal argument *the disaster* cannot be omitted (see (25)) (Grimshaw 1990). According to Grimshaw (1990), derived nominals with argument structure have obligatory internal arguments.<sup>8</sup>

---

<sup>8</sup> For derived nominals with argument structure, the external argument of is optional because it has been suppressed. See Section 2.2.3 for more discussion.

Hence, the Mandarin derived nominal in (24) does not have argument structure but the English derived nominal in (25) does.

(25) his constant reporting \*(of the disaster)

In previous studies on Mandarin derived nominals (e.g., Cheng 1999, He and Wang 2007, and Fu 1994), the Mandarin nominal in (24) is treated as having the same syntactic properties as the English nominal in (25). We consider that the difference in the obligatoriness of the internal arguments in (24) and (25) should be accounted for.

In sum, Mandarin derived nominals are similar to but also different from English derived nominals. More discussion on the argument structure of Mandarin derived nominals is given in Chapter 3, after the discussion of important concepts in Chapter 2. By examining Mandarin data, we aim at finding out whether the lexicalist or the syntactic approach can provide a better explanation for Mandarin data, including their similarity to and difference from English derived nominals in terms of word category and argument structure. Specifically, we intend to find out whether word category and argument structure should be treated as derived in syntax or as contained in the lexicon in the form of lexical information.

### 1.3 Organization of the thesis

The thesis is organized as follows. In Chapter 2, different accounts for derived nominals are reviewed, mainly based on English data. We argue that the syntactic approach provides a more satisfactory analysis for data on derived nominals in English and other languages, especially in accounting for the relation among



various nominalizing morphemes (e.g., the English *-ing* and *-tion*) and in accounting for the verbal features of derived nominals. The observations and discussions in Chapter 2 also serve as a foundation for the understanding of Mandarin derived nominals.

Chapter 3 examines the properties of Mandarin derived nominals and discusses the advantages and disadvantages of different accounts for Mandarin derived nominals. We observe that there is a type of Mandarin derived nominals that have argument structures (e.g., *fanyi* ‘translation’ in (20)). In Mandarin, such derived nominals require their semantic heads to denote telic events. But there is no similar requirements in English. Previous studies do not notice this difference.

In Chapter 4, we present our analysis of Mandarin derived nominals. Distributed Morphology (DM), a syntactic approach, is argued to be able to provide a systematic account for Mandarin derived nominals, as well as to explain differences in argument-taking ability between Mandarin and English derived nominals. It is argued that derived nominals in both languages are formed in syntax. The properties of Mandarin derived nominals, including the relation between telicity and argument structure, are accounted for by functional projections.

Chapter 5 concludes the thesis and states its significance and contribution. We aim at fulfilling the following objectives: clarification of data (e.g., which type of derived nominals in Mandarin has argument structure), evaluation of previous studies on Mandarin derived nominals, and a structural analysis of Mandarin derived nominals. Our analysis provides support to the view that word category and argument structure are not stored in the lexicon but are derived in syntax.

## Chapter 2 Different approaches to derived nominals

This chapter reviews the major analyses of derived nominals in English. Many studies on Mandarin derived nominals (e.g., Cheng 1999, He and Wang 2007, and Fu 1994) compare Mandarin data with English data and make proposals based on the similarities and/or the differences between the two languages. The evaluation of various approaches on English derived nominals is important for the discussion on Mandarin derived nominals in Chapter 3 and Chapter 4.

Gerundive nominals are frequently mentioned in the literature on derived nominals, because they also have argument structure. In our discussion, a gerundive nominal is referred to as a noun phrase headed by a gerund. In English, a gerund is the use of a verb as a noun by adding *-ing* to the verb. For instance, *singing* in (1) is a gerund formed by adding *-ing* to the verb *sing*. The phrase *John's singing the song* is a gerundive nominal.

- (1) John's singing the song bothers me.

“Derivation” and “inflection” are two important terms in the discussion of derived nominals. Most of the English derived nouns are formed by the addition of overt affixes such as *-tion* (e.g., *addition*), *-ment* (e.g., *assignment*), and *-al* (e.g., *refusal*). This is considered “derivational morphology,” as opposed to “inflectional morphology.” Inflectional morphemes encode grammatical information such as tense and number, but do not change the meaning of the word they attach to. Examples of inflectional morphology include the English past tense morpheme *-ed* (e.g., *destroyed*) and the English plural morpheme *-s* (e.g., *dogs*). Both *destroy* and

*destroyed* denote the same kind of action and both *dog* and *dogs* denote the same type of animals. Derivation creates new words from existing words of a language. For instance, attaching *-er* to the English verb *sing* produces the noun *singer*. If a morphological process results in change of meaning and/or change of word category, it is derivational (Bloomfield 1933). In the examples given above, *destroyed* and *destroy* are both event-denoting; *dogs* and the singular noun *dog* are both entity-denoting. However, *singer* is a noun denoting the agent of an action and *sing* is a verb denoting a kind of action; both the meaning and word category are changed. Hence, *-er* suffixation manifests the involvement of a derivational process.

We identify three approaches to derived nominals: the transformationalist approach, the lexicalist approach, and the syntactic approach. The transformationalist approach (Lees 1960) considers derived nominals to be formed from sentences; the syntactic approach (e.g., Alexiadou 2001, Borer 2005a, b, and Marantz 1997) considers them to be formed from verbal projections (which are smaller than sentences); the lexicalist approach contends that derived nominals contain no verbal projections (e.g., Chomsky 1970). The contention on the structure of derived nominals is fundamentally an inquiry on where and how the argument structure of derived nominals is realized. In the following, we review these approaches one by one.

## 2.1 Transformationalist approach

A transformation is defined as “the structural analysis of the strings to which it applies and the structural change that it effects on these strings” (Chomsky 1957:111). A transformation describes the structural relation between the input string and the output string.

Verbs and nouns share argument-taking properties in some cases. A verb involves a number of participants in the action/state denoted by the verb; interestingly, some nouns require a number of participants. For instance, the verb *destroy* in (2) takes an object *the city*, which is conceptually a participant of the action depicted by *destroy*. In the similar vein, *destruction* in (3), and *destroying* in (4) apparently all take *the city* as their respective participant; that is, the entity affected by the action of destruction is the city in all three cases. Hence, it can be said that *destroy*, *destruction*, and *destroying* all take an internal argument realized by *the city* in (2) to (4).

- (2) The enemy destroyed the city.
- (3) the enemy's destruction of the city
- (4) the enemy's destroying the city

Intuitively, one may regard these three pieces of data as structurally related. The question is what operational mechanism of the grammatical system makes this possible.

Lees (1960) captures this intuition by transformational rules. For ease of exposition, we use the concrete examples in (2) to (4) rather than the abstract symbols in Lees (1960) to illustrate the transformational rules. In the transformations in (5) and (6), the past tense morpheme *-ed* is deleted in the output strings; the genitive marker *'s*, the nominalizing morphemes *-tion* / *-ing*, and preposition *of* (in (5) only) are added in the output strings.

- (5) the enemy destroy-ed the city → the enemy-'s destruct-tion of the city

(6) the enemy destroy-ed the city → the enemy-'s destroy-ing the city

Lees' (1960) analysis captures the intuition that derived nominals and gerundive nominals are related to their corresponding sentences. Due to the change of theoretical assumptions, Lees' analysis cannot be maintained. As shown in (5) and (6), the input and output strings of a transformational rule are both well formed (i.e., grammatical) structures. In the framework developed since Chomsky (1965), it is assumed that the structure generated from the lexicon before application of syntactic derivations determines semantic interpretation (Katz and Postal 1964). In other words, the meaning of a string is determined from the very beginning of its generation. This amounts to saying that transformations cannot alter the meaning of the original string stemming from the lexicon. Even if there were any deletion or addition of meaning-bearing elements in transformations, these structural changes would be in vain, as the meaning of the original string has already been determined.<sup>9</sup> In this sense, the transformations proposed by Lees (1960) in (5) and (6) cannot be maintained, because, under his analysis, the meaning having to do with tense has to be deleted in the transformation. In the current generative framework (Chomsky 1970, 1995), the absence of tense morphemes in derived nominals and gerundive nominals indicates that tense morphemes are not involved at all.<sup>10</sup>

Chomsky (1970) proposes accounting for the similar argument structure of nominals and their corresponding sentences by syntactic structures. For instance,

---

<sup>9</sup> To be precise, transformations can delete elements only under the recoverability condition (Chomsky 1965). If the deleted item is recoverable, the meaning of the string is not changed.

<sup>10</sup> For this reason, although the current syntactic approaches (e.g., Alexiadou 2001, Borer 2005a,b) also propose an underlying verbal structure for derived nominals (similar to Lees 1960), the underlying structure is argued to be less than a sentence, i.e., a structure without tense projection (see Section 2.3 for more detail).

the internal argument of derived nominals, gerundive nominals, and verbs are all projected as complements to lexical heads. The lexical heads may be N or V, which are abstracted into X, leading to the advancement of X-bar Theory (Chomsky 1970, Jackendoff 1977). Despite the involvement of syntax in providing argument positions, Chomsky's (1970) approach to derived nominals is a lexicalist one because the semantic heads of derived nominals are derived in the lexicon and because argument structure is stored as lexical information. Chomsky's proposal is also known as "lexicalism," which is reviewed in the next section.

## 2.2 Lexicalist approach

The lexicalist approach contends that derived nouns are formed in the lexicon (e.g., Chomsky 1970, Grimshaw 1990, Sioni 1997). In the following, we review Chomsky's (1970) influential paper and Grimshaw's (1990) seminal study.

### 2.2.1 Chomsky (1970)

The lexicalist approach relies on a major revision of theoretical assumptions made in Chomsky (1965) (based on Katz and Postal 1964): the separation of the lexicon from syntax. The lexicon is regarded as containing idiosyncratic phonetic, semantic, and syntactic features (Chomsky 1965). For example, *h* is silent in *hour* but not in *hot*; *hour* refers to a period of time; the object of *eat* is deletable (e.g., *He is eating*) but the object of *find* is not omissible (e.g., *\*He finds*). The advantage of proposing a separate lexicon is to constrain lexical idiosyncrasies so that syntactic rules do not need to specify these idiosyncrasies. This in essence has paved the way for the later theoretical developments regarding the nature of parameters and principles of

Universal Grammar (Chomsky 1986a, b), i.e., the lexicon contains idiosyncrasies having to do with variations across languages.

Based on the framework established in his 1965 work, Chomsky (1970) compares derived nominals with gerundive nominals, which he argues are formed in syntax.<sup>11</sup> Chomsky observes four differences between derived nominals and gerundive nominals, which constitute four reasons for analyzing derived nouns as derived in the lexicon and base-generated as lexical words in syntax.

The first reason concerns productivity. If derived nouns result from verbs in syntax, all verbs should have corresponding derived nominal forms. But this is not the case. Chomsky uses the English causative *grow* as an example. In (7) below, sentence (a) roughly means ‘John causes tomatoes to grow’; it has a corresponding gerundive phrase like (b), but the derived nominal in (c) is ungrammatical.

- (7) a. John grows tomatoes.  
b. John’s growing tomatoes  
c. \*John’s growth of tomatoes (Chomsky 1970:192)

Chomsky argues that if gerundive nominals and derived nominals were both syntactically generated, one would expect them to be equally productive. Just like every verb has a past tense form, every verb has a gerundive form (Lees 1960). But not every verb has a derived nominal counterpart (e.g., the causative *grow* in (7)). So if derived nouns are formed from verbs in syntax, it is difficult to explain why such a syntactic process is available only to a subset of verbs, as opposed to the syntactic processes of deriving past tense forms and gerunds, which are available to

---

<sup>11</sup> The differences between gerundive nominals and derived nominals are also observed in Lees (1960). In the framework adopted by Lees (1960), these differences are captured by separate but similar transformations (see (5) and (6) in Section 2.1).

all verbs in English. So Chomsky concludes that the restricted productivity of derived nominals suggests that derived nouns are generated in the lexicon, which contains idiosyncratic lexical information stating which entry allows a derived noun.

The second reason for analyzing derived nouns as derived in the lexicon is that derived nouns may involve a meaning shift, which is unexpected in syntactic transformations. As mentioned shortly before, according to Chomsky (1965, 1970), transformations do not change the meaning of the input string. If derived nominals are generated through transformations, the meaning of *John's deeds* should be the same as *things that John did*. But the former means 'the significant things that John did' (Chomsky 1970: 217). In contrast, the relationship between the meaning of the verb and the meaning of the gerund is regular. For instance, the verb *do* means "to work on something" both in the gerundive nominal in (8) and in the sentence in (9). The addition of *-ing* does not alter the meaning of *do*.

(8) John's doing his homework

(9) John is doing his homework.

The third reason for analyzing derived nouns as derived in the lexicon has to do with the difference that the derived nominal exhibits nominal features but no verbal features, whereas gerundive nominals have verbal features (Chomsky 1970). If derived nominals were based on verbal structures, it would be expected that they should exhibit verbal properties such as assignment of accusative case and modification by adverbs. But this is contrary to the fact, as can be observed in the data below.



- (10) a. John's kindly refusing the offer  
       b. \*John's kindly refusal of the offer
- (11) a. \*John's kind refusing the offer  
       b. John's kind refusal of the offer
- (12) a. John's having refused the offer  
       b. \*John's have refusal of the offer

The derived noun *refusal* does not assign accusative case to *the offer* (instead, the case is assigned by *of*) and it is modified by an adjective *kind*, as shown in the (b) examples in (10) and (11). Under standard assumptions, nouns do not assign accusative cases and can be modified by adjectives. The lack of case assignment property and modifiability by adjectives are nominal features, which indicate that derived forms like *refusal* have nominal structures. In contrast, gerundive nominals exhibit verbal features: they may contain auxiliaries (e.g., *have* in (12)) and can be modified by adverbs (e.g., *kindly* in (10)). In addition, *John's* in the gerundive nominals above cannot be replaced by a determiner (see (13)), while the presence of a determiner is possible with the derived nominal (see (14)):

- (13) \*The having refused the offer was unreasonable.
- (14) The refusal of the offer was unreasonable.

The presence of the determiner *the* in the derived nominal of (14) is consistent with Chomsky's (1970) argument that derived nominals share similar structures with ordinary noun phrases which can follow determiners (e.g., *the dog of my friend*).

According to Chomsky, the verbal behaviors of gerundive nominals indicate underlying verbal structures; the fact that derived nominals have nominal but not verbal features indicates that they have no underlying verbal structures.<sup>12</sup>

Lastly, as pointed out by Chomsky (1970), certain constructions that occur with verb phrases are barred in derived nominals, but they are possible with gerundive nominals. Phrases in (15) to (17) illustrate this difference with examples of raising to subject.

(15) John appears to be sick.

(16) John's appearing to be sick

(17) \*John's appearance to be sick

In (15), the subject *John* is not an argument of the one-place predicate *appear*; *John* raises from the nonfinite clause *John be sick* to the subject position of the matrix clause. This is a raising-to-subject process, which is applicable to gerundive nominals, as shown in (16). If a derived nominal is not formed in syntax, but rather stems from the lexicon, it should be insensitive to syntactic operations on verbs, because in syntax, its status is a noun. The lack of raising to subject with *appearance* shown in (17) argues for *appearance* to be a noun; the only possibility for it to be related to the verb *appear* is, therefore, confined to the lexicon.

Therefore, Chomsky (1970) argues that gerundive nominals involve NP projections over sentential structures while derived nouns are formed in the lexicon and they are base-generated in syntax as nouns. In other words, syntax derives a

---

<sup>12</sup> The syntactic approach (e.g., Alexiadou 2001, Borer 2003) to derived nominals recognizes this fact, too. But the syntactic approach argues for a finer verbal structure, that is, verbal projections involve more functional categories than a single VP (see Section 2.3). The lack of some verbal properties is attributed to the absence of some (but not all) of the verbal projections.

gerundive nominal out of a verbal structure, but derived nouns come out of the lexicon already as nouns. The approach that takes derived nominals as formed in the lexicon is referred to as “lexicalism” or “the Lexicalist Hypothesis.” The four differences between derived nominals and gerundive nominals are explained as follows. Firstly, whether a verb has a derived noun counterpart is an idiosyncratic lexical property; the lexicon contains specific information as to which verb has a derived noun and which one does not. Suffixation of *-ing* is a syntactic process and it applies without being affected by the individual properties of verbs (Chomsky 1970). Thus, the formation of derived nominals is not productive but that of gerundive nominals is. Secondly, the meaning of derived nouns may deviate from the meaning of their corresponding verbs (e.g., *deed* and *do*, *belief* and *believe*) because lexical processes are subject to individual variations. After a word enters syntax, its meaning is fixed and does not change in the course of syntactic derivations. Therefore, generating gerunds in syntax keeps the verb meaning intact. Thirdly, derived nouns are just a type of nouns and they share the syntactic features of all nouns in general; so derived nominals have the structure of a noun phrase and exhibit no verbal behavior. In contrast, gerundive nominals involve verbal projections and hence exhibit verbal behavior. Fourthly, because derived nominals have nominal structures, transformations that apply to verbal structures (e.g., raising to subject) do not apply to derived nominals. But gerundive nominals, since they contain underlying verbal structures, they allow transformations like raising to subject to take place.

In sum, the Lexicalist Hypothesis for derived nominals accounts for a number of disparities between derived nominals and gerundive nominals. But it is

not without problem. One issue deserving discussion is the distinction between inflectional and derivational morphology, which we turn to in the next subsection.

### 2.2.2 Inflection and derivation

At the beginning of this chapter, we have introduced the differences between inflection and derivation. Based on their differences and Chomsky's (1970) discussion on the Lexicalist Hypothesis, the conclusion can be drawn that inflectional morphology happens in syntax while derivational morphology takes place in the lexicon (e.g., Chomsky 1995, Wasow 1977, Zwart 1997). The reasoning goes as follows. Inflectional morphemes like the English past tense morpheme *-ed* and the plural morpheme *-s* typically do not change the meaning of the word they attach to. Derivations change the base words' meaning significantly to yield new words with new meanings and such changes occur in an unpredictable way.<sup>13</sup> For example, *examination* may denote either the action of examining something or test questions for students. According to the Lexicalist Hypothesis (Chomsky 1970), these are idiosyncratic lexical properties that should be handled in the lexicon (Wasow 1977).

Our discussion concerns the morphological and syntactic status of the English *-ing*. Based on the distinction between inflectional and derivational morphemes introduced at the beginning of this chapter, we identify three types of the English *-ing* in the data related to derived nominals. As a present participle, it is an inflectional morpheme, since it does not change the meaning or the category of the word (e.g., *singing* in *He is singing*). As a gerundive marker, *-ing* is a kind of derivational morphology. For example, in *Her singing is beautiful*, *singing* is a

---

<sup>13</sup> This point is to be refuted in the ensuing review on Grimshaw (1990). It is to be argued in Section 2.2.3 that the meaning change is predictable and systematic in the type of derived nominals that are syntactically derived from verbs.

noun derived from the verb *sing* (see also Anderson 1982). Also, in the “mixed nominalization” (e.g., *John’s refusing of the offer*) discussed by Chomsky (1970), *refusing* is a noun, for it does not assign case to *the offer*.<sup>14</sup> The change in word category indicates that the *-ing* in mixed nominalization is a derivational morpheme. There is a third type of *-ing*: the *-ing* in the gerundive nominals discussed by Chomsky (1970). In *the enemy’s quickly destroying the city*, *destroying* still behaves a verb, as it assigns accusative case to *the city* and is modified by the adverb *quickly*. This *-ing* does not change the lexical category nor the meaning of the verb *destroy*. Thus, the *-ing* in gerundive nominals is an inflectional morpheme.

The observations above suggest that there are three types of *-ing* morphemes. It is an inflectional morpheme in sentences, an inflectional morpheme in gerundive nominals, and a derivational morpheme in nouns like *singing*.<sup>15</sup> But this classification is just a description; it provides us no insight or explanation on the nature of *-ing*. Besides, the classification cannot tell us why in gerundive nominals like *John’s refusing the offer*, *refusing* is still a verb but the syntactic distribution of the phrase is similar to that of noun phrases. For example, gerundive nominals (see (18)) and ordinary noun phrases (see (19)) can function as objects of prepositions, but sentences (see (20)) and verbs (see (21)) cannot.

(18) a. She is upset because of John’s refusing the offer.

b. As to John’s refusing the offer, she didn’t say anything.

---

<sup>14</sup> *John’s refusing of the offer* is “mixed” nominalization (Chomsky 1970) because it has the *-ing* form similar to gerundive nominals but has nominal properties similar to derived nominals, such as the dependence on *of* to assign accusative case.

<sup>15</sup> Baker (1985) holds the view that there is no sufficient proof to separate derivational and inflectional morphology (see also Anderson 1982). Consequently, the two types of morphological processes are treated on a par and a uniform explanation for morphology is made possible.

- (19) a. She is upset because of John's book.  
       b. As to John's book, she didn't say anything.
- (20) a. \*She is upset because of (that) John refused the offer.  
       b. \*As to (that) John refused the offer, she didn't say anything.
- (21) a. \*She is upset because of refuse.  
       b. \*As to refuse, she didn't say anything.

Hence, we question the significance of treating derivation and inflection as separate morphological processes that take place in different modules of grammar. It will be shown in Section 2.3 that the syntactic approach provides a more systematic account for derivational and inflectional morphologies by treating both as syntactic derivations.

The above discussion focuses on the generation of the semantic heads of derived nominals in the lexicalist tradition. In the next subsection, we discuss Grimshaw's (1990) study on the argument structure of derived nominals.

### 2.2.3 Grimshaw (1990)

In Section 1.1, we have introduced Grimshaw's (1990) proposal of argument structure as an independent level of representation that interacts with event structure to determine argument realization. In this subsection, we focus on her study of derived nominals, which has much influence on subsequent researches.<sup>16</sup>

---

<sup>16</sup> We put the discussion on Grimshaw (1990) in the section on the lexicalist approach because she considers that derived nouns are formed in the lexicon. As to argument structure, Grimshaw treats it as an issue of the syntax-semantics interface, and thus her approach to argument structure is not purely lexicalist.

Based on the semantics and syntax of derived nominals, Grimshaw (1990) classifies English derived nominals into complex event nominals, simple event nominals, and result nominals. Relevant examples are given below.

(22) Complex event nominal

*The constant assignment \*(of unsolvable problems)* is to be avoided.

(Adapted from Grimshaw 1990:50 (8b,c))

(23) Simple event nominal

*The event/race/trip/exam* took a long time/ took place at 6:00 p.m.

(Grimshaw 1990: 59(30))

(24) Result nominal

*The assignments* were avoided by students.

(Adapted from Grimshaw 1990:51 (9))

Complex and simple event nominals refer to events, whereas result nominals refer to entities. In (22), *the constant assignment of unsolvable problems* refers to the event of assigning problems relentlessly. In (23), the italicized nominals refer to events of a race, a trip, or an exam. Result nominals refer to entities related to or resulted by certain events. In (24), the result nominal *the assignments* refers to the homework assigned to students. The head nouns of complex event nominals and result nominals contain strings that correspond to verbs. For instance, *assignment* is related to the verb *assign*. Simple event nouns may or may not correspond to verbs. For instance, in (23), *exam* is related to the verb *examine*, but *trip* cannot be used as a verb (in the sense relevant here).

The contrast between complex event nominals and the other two types of nominals is significant for the understanding of the nature of complex event nominals. Grimshaw (1990) argues that only complex event nominals have argument structures. This is exemplified by the fact that complex event nominals have obligatory internal arguments, as indicated by the impossibility of omitting *of unsolvable problems* in (22).<sup>17</sup> Their differences are summarized in the table below.

Table 1 Comparison among three types of nominals

	Denotation	Argument structure
complex event nominals	event	yes
simple event nominals	event	no
result nominals	entity	no

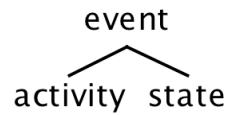
Grimshaw (1990) argues that the three types of nominals in Table 1 are all formed in the lexicon. The head nouns of complex event nominals have argument structure because they are derived from verbs, which carry argument structure as part of their lexical information. Result nouns and simple event nouns can also be formed from verbs, but they do not inherit the argument structure of the verb. Grimshaw (1990) considers that it is the event structure that determines the inheritance of argument structure (see also Section 1.1). Complex event nominals have a complex event structure like (4) in Chapter 1 (repeated below as (25)), while simple event nominals (like *a trip*) have a simple event structure like (26).

<sup>17</sup> The external argument in a complex event nominal is omissible, but this is not a piece of evidence showing that the nominal lacks argument structure. According to Grimshaw (1990), the external theta-role in a complex event nominal is suppressed, much like what happens in passive formation. Take *destroy* for example. In the complex event nominal (i) and the passive sentence (ii), the external argument *the enemy* are realized as adjuncts and can be omitted.

(i) the destruction of the city (by the enemy)  
(ii) The city was destroyed (by the enemy).



(25)



(26)



Grimshaw (1990) suggests that only derived nouns denoting complex events have argument structure.<sup>18</sup> Simple event nominals have simple event structure (just an activity) and result nominals do not have event structure (for they refer to entities); hence, neither of them have argument structure.

Grimshaw's (1990) classification of the three types of nominals has been widely accepted, that is, derived nominals may or may not have argument structure and derived nominals may denote events or entities. But her lexicalist proposal that complex event nominals are formed in the lexicon has been challenged. Most importantly, the origin of the argument structure of complex event nominals has been questioned. Borer (2003) points out that nouns derived from adjectives may

---

<sup>18</sup> This is because a complex event structure involves an internal aspectual analysis of subevents, that is, the first subevent (e.g., the activity in (25)) is more prominent than the second subevent (e.g., the state in (25)). This aspectual dimension is absent in the simple event structure of (26), for there is just one subevent. The lack of prominence relation in the subevents makes it impossible to interact with argument structure, which involves prominence relations among arguments. Thus, the simple event nominals do not have argument structure.

have argument structure but they obviously do not have a complex event structure.

For instance,

(27) their constant awareness of the problem

(28) They are aware of the problem constantly.

In (27) and (28), the derived noun *awareness* and the adjective *aware* both take *the problem* as the internal argument. Being aware of something is a psychological state, which does not have a complex event structure. According to Grimshaw (1990), only derived nouns with complex event structure like (25) have argument structure. The example in (27) refutes her proposal because *awareness* takes an internal argument. Borer (2003) argues that the ability to take arguments (rather than the complex event structure) is the most salient property that separates complex event nominals from simple event nominals and result nominals. Thus, Borer (2003) refers to complex event nominals as “argument-structure nominals” (AS-Nominals, henceforth). In the following, we use the term “AS-nominals” instead of “complex event nominals”; we use “AS-nouns” to refer to the head nouns of AS-nominals. Simply put, AS-nouns are derived nouns with argument structure.

Overall, the review on Chomsky (1970) suggests that the similarity between the lexical derivation of derived nouns and the syntactic generation of gerunds remains to be captured; the review on Grimshaw (1990) reveals that the presence of argument structure for a derived noun is not purely determined by the complexity of event structure. These issues are resolved in the syntactic approach.

## 2.3 Syntactic approach

The most distinctive argument in the syntactic approach to derived nominals is that AS-nominals have underlying verbal structures (Alexiadou 2001, Borer 2003, Marantz 1997, Picallo 1991, van Hout and Roeper 1998). As to simple event nominals and result nominals, both the syntactic and lexicalist approaches consider that they have similar structures as other noun phrases in general. The differences in the technicalities of their analyses of derived nominals without argument structure are due to differences in theoretical assumptions. Hence, the differences between the lexicalist and the syntactic analyses of simple event nominals and result nominals do not contribute to our evaluation of the two approaches. In this section, we focus on AS-nominals and show that the syntactic approach is more preferable to the lexicalist approach.

### 2.3.1 Underlying VPs

The crucial support for the syntactic approach comes from evidence on underlying VPs. Under the standard assumption that adverbs modify VPs and not NPs (Jackendoff 1977, Li and Thompson 1981), the appearance of adverbs points to the presence of VPs in AS-nominals. Supporting data have been discovered in English and in other languages.

Fu, Roeper, and Borer (2001) observe that adverbs may appear in English AS-nominals, contrary to the observations made in Chomsky (1970) and Grimshaw (1990) (see, e.g., the data in (10) of this chapter). In (29), the adverb *rapidly* modifies *transformation*.

(29) **His transformation into a werewolf so rapidly** was unnerving.

The possibility of using an adverb within the AS-nominal indicates that there may be an underlying verbal projection.<sup>19</sup>

In addition, Hebrew and Greek permit adverbs in AS-nominals (see Alexiadou 2001 for Greek; Borer 1993, 2003, Hazout 1995 for Hebrew). In the Hebrew example in (30) and the Greek example in (31), the derived nouns ‘destruction’ are AS-nouns for they take internal arguments ‘the village’ and ‘the documents’; both noun phrases allow adverbial modification.

- (30) harisat    ha-cava        et    ha-kfar    be-axzariyut  
destruction the army    ACC   the village cruelly  
‘the army’s destroying the village cruelly’    (Hazout 1995: 361 (11))

- (31) i    katastrofi    ton egrafon        prosektika / me prosoxi  
the destruction the documents-GEN carefully / with care  
‘the destruction of the documents carefully’  
(Alexiadou et al. 2007:508(73b))

Moreover, adverbs are disallowed in simple event nominals and result nominals, forming a clear contrast with the AS-nominals in (30) and (31) (Alexiadou et al. 2010). In the Greek example of (32), whether the derived noun *katastrofi* is interpreted as denoting a simple event or an entity, the phrase is ungrammatical.

---

<sup>19</sup> Many speakers find examples such as (29) rather marked as reported in Alexiadou et al. (2007). Generally speaking, adverbs do not appear in English AS-nominals (see (i)), as observed by Lees (1960), Chomsky (1970), and Grimshaw (1990), among others. But in other languages, adverbs can appear in AS-nominals, as shown in (30) and (31).

(i) her (\*kindly) refusal of the offer

(32) \*i katastrofi prosektika

the destruction carefully

(Alexiadou et al. 2007:508(73c))

Hence, adverbs are only allowed in AS-nominals in Greek, suggesting that there are verbal projections in AS-nominals but not in simple event nominals or result nominals.

Based on these documented cross-linguistic observations, we consider that AS-nominals contain underlying VP projections. This conclusion relies on an important assumption of the syntactic approach (e.g., Alexiadou 2001, Borer 2003, 2005a, b, Halle and Marantz 1993). The syntactic approach assumes that Universal Grammar makes available a number of syntactic structures, from which languages can select to build their own grammar (Borer 2005a,b, Marantz 1997). The availability of a certain structure in a language signals its presence in the Universal Grammar and further predicts that some other language may also make use of such a structure. The absence of a certain structure in a language is due to language-specific reasons. The cross-linguistic evidence for the existence of adverbs in AS-nominals (e.g., (30) and (31)) proves that there are verbal projections within AS-nominals. In the next subsection, we present the analysis of English derived nominals in the syntactic approach.

### 2.3.2 The structure of English derived nominals and gerundive nominals

The structural analysis of derived nominals to be introduced below adopts the framework of Distributed Morphology (DM), a representative syntactic approach that have brought about much insight to the study of derived nominals (e.g., Alexiadou 2001, Alexiadou et al. 2010, Marantz 1997). DM is a syntactic approach

in that it emphasizes the role of syntax in the construction of meanings (e.g., noun-verb distinction) traditionally attributed to lexical information.<sup>20</sup>

We briefly introduce the DM framework before presenting the structure of AS-nominals. A distinctive proposal of DM is that words are formed in syntax rather than stored in the lexicon. The lexicon is traditionally considered to consist of information on word category, the meaning of the word, and its pronunciation. In the DM approach, these pieces of information are distributed in different components. The basic meaning of a lexical word is contained in the “Root,” which has no word category information. The category of the Root is determined in syntax by functional projections (examples are provided shortly). Phonological information is provided after syntax (see (33)).<sup>21</sup> In this way, morphology is “distributed among several different components” (Halle and Marantz 1993:112).

The grammar of DM is illustrated in (33). Roots and abstract morphemes (e.g., nominalizing morphemes) are the basic syntactic objects. The basic operations in syntactic derivation include Merge and Move (Chomsky 1995). Simply put, Merge combines two syntactic objects into a structural relation; Move makes a copy of certain syntactic object and then merges it with another syntactic object.<sup>22</sup>

---

<sup>20</sup> To my knowledge, DM is in general agreement with other syntactic approaches such as those advanced by Baker (1988), Borer (1993, 2005a,b), Pesetsky (1995), and Pollock (1989).

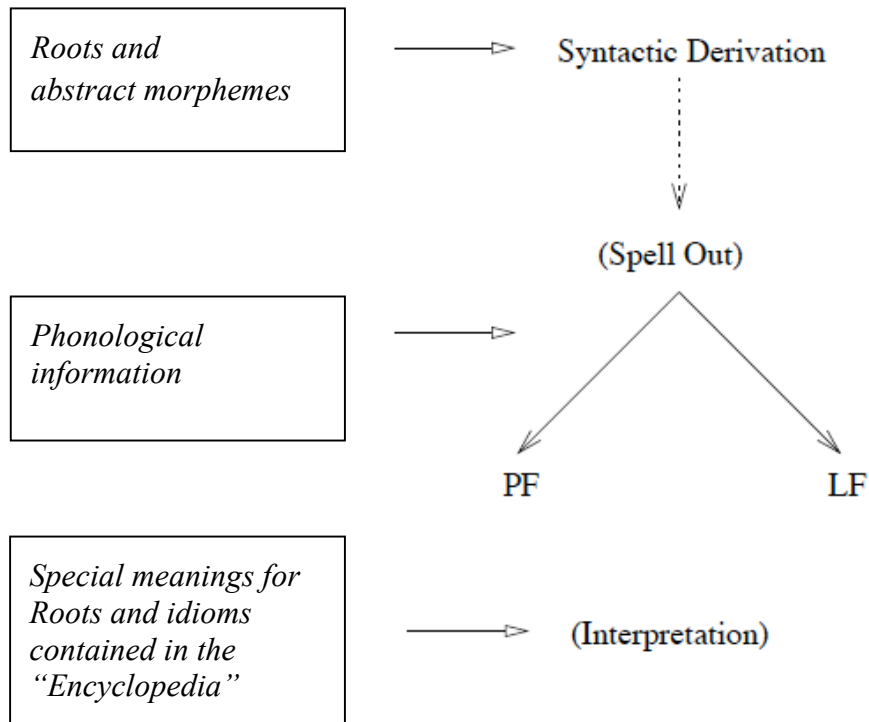
<sup>21</sup> DM assumes that affixes and Roots are separate syntactic objects that are combined in syntax (Halle and Marantz 1993); it follows that the phonological content of affixes is realized after the completion of syntactic processes. By contrast, in non-syntactic approaches (e.g., Chomsky 1995), the phonological content of an affix is determined in the lexicon. This treatment is also due to theoretical assumptions: for instance, Chomsky (1995) assumes that the lexicon contains well-formed words. Under such a view, since affixes are already attached to stems in the lexicon, the phonological content of affixes can be realized in the lexicon.

<sup>22</sup> Chomsky’s (1995) definition of Merge and Move are:

Merge: Applied to two objects  $\alpha$  and  $\beta$ , Merge forms the new object  $\gamma$  (p.396).

Move: Given the phrase marker  $\Sigma$  with terms  $K$  and  $\alpha$ , Move targets  $K$ , raises  $\alpha$ , and merges  $\alpha$  with  $K$  to form the new category  $\gamma$  with the constituents  $\alpha, K$  (p.399).

(33) The Grammar of DM



(Based on Embick and Noyer 2007:301(13))

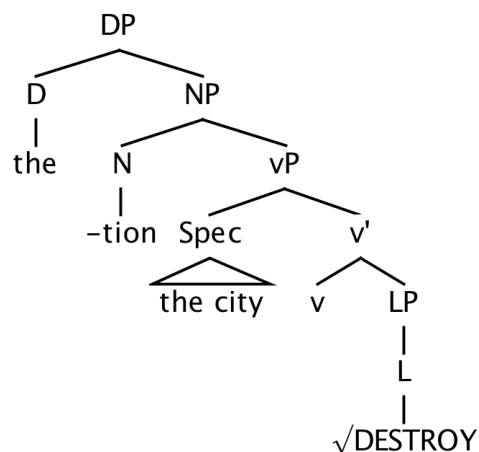
Syntactic structures generated in syntactic derivations cannot be pronounced or understood until they are interpreted. The Spell Out is the point when the phonological and semantic properties of syntactic structures are processed. After Spell Out, the syntactic objects are sent to PF (“Phonological Form”) and LF (“Logical Form”) for phonological and semantic interpretations, respectively. On the PF branch, vocabulary information is accessed, providing the necessary phonological information to the syntactic outputs.<sup>23</sup> LF is where semantic interpretation like scope relations takes place. Lastly, the Encyclopedia provides special meanings to idioms and words assembled in syntax. The Encyclopedia is necessary because the interpretation of some words and all idioms require the

<sup>23</sup> “Vocabulary” in DM is different from the traditional “word.” Vocabulary in DM contains phonological information for Roots and other morphemes (to be discussed shortly); in DM, words are assembled by the rules of syntax (Halle and Marantz 1993, Embick and Noyer 2007).

world knowledge of the speaker. For instance, *kick the bucket* does not mean ‘to kick a certain bucket’ but rather ‘to die’, which meaning cannot be deduced from the syntactic structure of *kick the bucket* at all. As to the meaning of words that is determined in the Encyclopedia, we use simple event nouns and result nouns as examples. It will be shown shortly in this section that derived nouns denoting simple events and entities share the same syntactic structure, their distinction in meaning is determined by the context provided by sentences and by world knowledge.

In DM, the word category of a Root is determined in syntax by the functional categories that it merges with. We illustrate this point with a concrete example of AS-nominals. The argument structure of AS-nominals suggests the presence of argument-introducing functional categories. Based on Alexiadou (2001) and Marantz (1997), the structure for *the destruction of the city* is illustrated below.

(34)





The structure of AS-nominals in (34) contains both nominal and verbal projections. The existence of verbal projections in AS-nominals has been discussed in Section 2.3.1. In (34), *v* is the verbalizing head and *N* is the nominalizing head. The nominalizing head takes a *vP* as its complement to produce a nominalized event.<sup>24</sup> Although there is a *vP* in the structure, the higher nominal projections *N* and *D* determines that the resultant phrase is nominal. The LP (“Lexical Phrase”) is the projection of the category-neutral Root  $\sqrt{\text{DESTROY}}$ . As discussed in Section 1.1, the syntactic approach to argument structure assumes that the position of an argument in the syntactic structure determines its theta-role. The noun phrase *the city* introduced at Spec,*vP* in (34) is interpreted as the Theme (see Section 1.1).<sup>25</sup>

As to the external argument of the derived noun, according to Grimshaw (1990), it is suppressed (similar to the process of suppression of external argument in passivization); the suppressed argument of the derived noun can be optionally realized as a possessor (see (35)) or in a *by*-phrase (see (36)), both of which are adjunct positions (see also footnote 17).

(35) the enemy’s destruction of the city

(36) the destruction of the city by the enemy

---

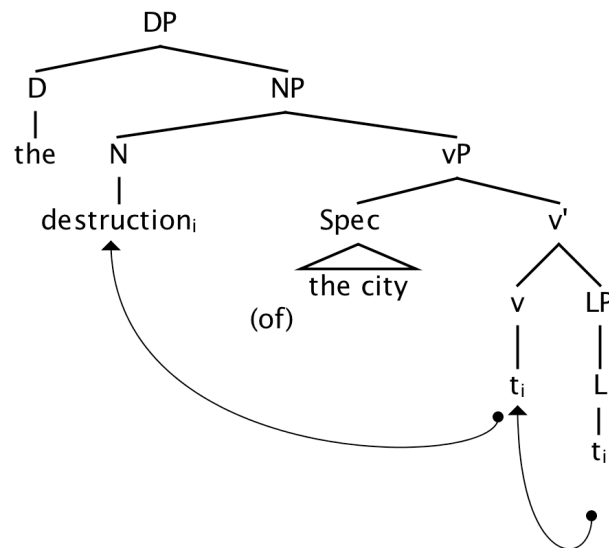
<sup>24</sup> A nominalized event can be understood as the second order nominal of Lyons (1977). Lyons divides nominals into three classes: first order nominals, secondorder nominals, and third order nominals. First order nominals are expressions that refer to concrete entities. Second order nominals are expressions that refer to events, states, etc., which occur at a certain time rather than exist in space. Third order nominals are those expressions that refer to abstract entities such as propositions.

<sup>25</sup> Alexiadou (2001) considers that the internal argument is licensed by *v* but not introduced as Spec, *vP*. Instead, the internal argument is introduced as the complement of *L*. To be consistent with the discussion on argument structure in Section 1.1, we do not adopt her analysis. Yet her essential assumption is unaltered in the structure in (34); that is, the presence of the internal argument depends on *v*.

In the DM framework, the optionality of the external argument in AS-nominals is accounted for by the absence of the VoiceP, which, as discussed in Section 1.1, introduces the external argument bearing the Agent theta-role. The possessor *the enemy* in (35) occupies the Spec,DP of (34); the *by*-phrase is an adjunct of the vP in (34) (Alexiadou 2001).

The derivation in (37) below shows that the Root  $\sqrt{\text{DESTROY}}$  undergoes head-movements from L to v, and finally to N, so as to support the verbalizing and nominalizing morphemes (abstract morphemes need Roots to attach to so as to realize their phonological content at PF). During the movements, the Root is also categorized as a verb by moving to v and further nominalized by moving to N.

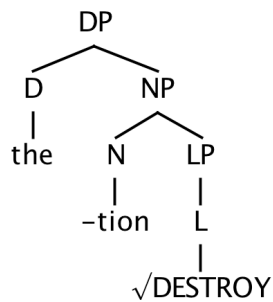
(37)



In (37), the preposition *of* is inserted to assign case to *the city* (Alexiadou 2001). The *of* insertion in English takes place as a last resort, as there is no functional projection within process nominals which could assign case to the theme argument (Harley and Noyer 1998).

The absence of argument structure and other verbal properties for result nominals suggests the total absence of verbal projections, as shown by the following tree diagram for *the destruction*.

(38)



(Based on Alexiadou 2001)

In (38), the Root  $\sqrt{\text{DESTROY}}$  is directly nominalized by N, producing a noun *destruction* without argument structure. This structure also derives the simple event nominal *the destruction*. Whether *destruction* is interpreted as a simple event noun or a result noun is determined by the meaning of the sentence it occurs in and by world knowledge. For example, in (39), *the destruction* is understood as the remainings after an event of destruction, because only the remainings can be described as *awful to see*. Hence, *the destruction* in (39) is a result nominal. In (40), *the destruction* denotes an event, for events but not entities can *go on for two hours*; so it is a simple event nominal.

(39) The destruction was awful to see.

(40) The destruction went on for two hours.

Crucially, the differences among different types of derived nominals are captured structurally. A complex event nominal results from a nominal structure where the head N merges with a vP; a simple event nominal and a result nominal result from a nominal structure where the N merges directly with an LP. Such a difference well captures a number of facts observed by Grimshaw (1990) concerning the verbal properties of AS-nominals, including the requirement on the presence of internal arguments (see (41)), the possibility of event modification (see *constant* in (42)), and the compatibility with temporal modification (see the *in/for*-phrases in (43) and (44)).

(41) The constant assignment \*(of unsolvable problems) is to be avoided.

(=(22) of Chapter 2)

(42) a. the constant examination of the problem

b. \*the constant exam

(43) a. the observation of the patient for two hours

b. the destruction of the city in two hours

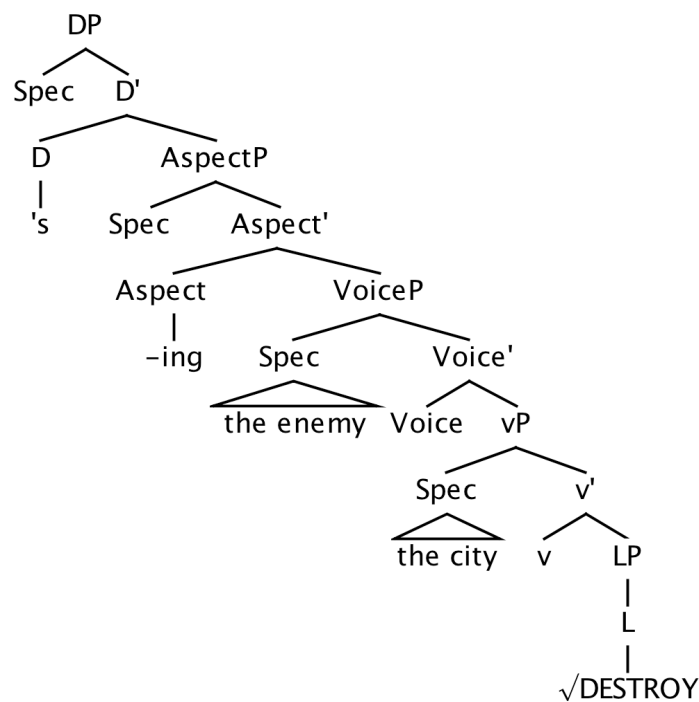
(44) \*the exam in/for two hours

In this way, AS-nominals, simple event nominals, and result nominals can all be syntactically derived from the same Root. It is the different functional projections that determine whether the Root becomes an argument-taking noun or a result/simple event noun. This view removes the necessity for debating whether an AS-nominal is derived from a verb and where the derivation takes place.

Gerundive nominals should involve more verbal projections, because they have more verbal properties (e.g., adverbial modification). It is argued that the Aspect projection is present in gerundive nominals (Alexiadou 2001). In sentences like *John was reading a book*, *-ing* is the progressive marker and projected as Aspect (Borer 2005a, b). It is also analyzed as Aspect in gerundive nominals (Alexiadou 2001, Siegel 1998). The structure of (45) is illustrated in (46) below.

(45) the enemy's destroying the city

(46)



(Based on Alexiadou et al. 2007: 531 (105))

The nominal distribution of the gerundive nominal is accountable with a DP projection. Tense morphemes never appear in gerundive nominals (e.g., *\*his*

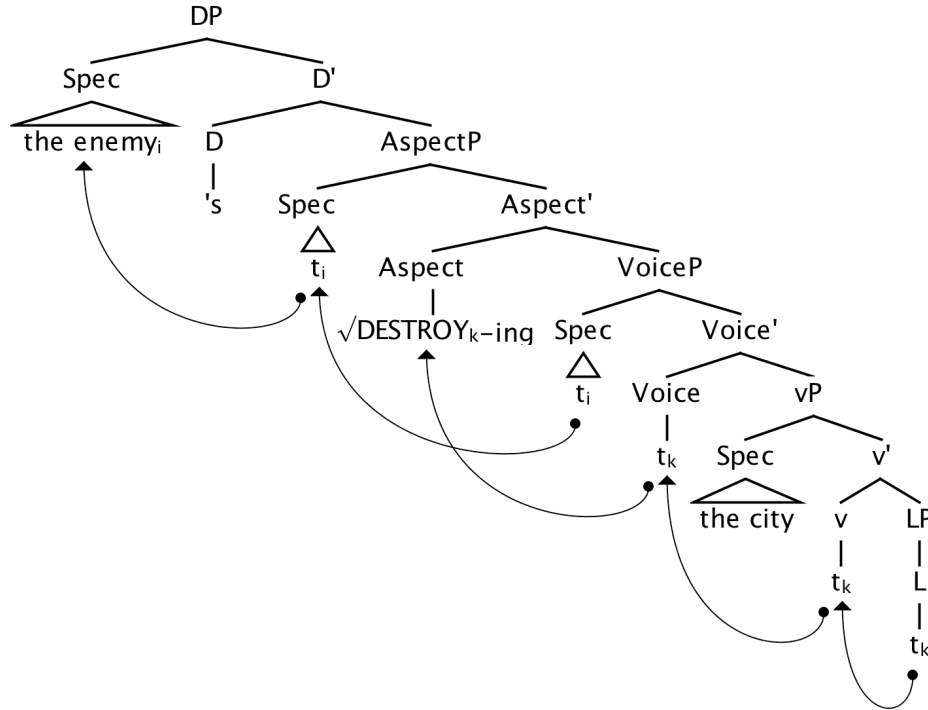
*learned*ing French) and thus TP should be absent. TP and AspP are closely related, for they encode the essential information for events and states: tense and aspect. If AspP may appear in nominals as an underlying structure, why is TP absent?<sup>26</sup> We suggest this is due to the similarity between D and T. Both of them are related to the specification of reference (Abney 1987, Szabolcsi 1994). In general, determiners pick out a particular member of the entities denoted by the noun; tense picks out a particular instance of the event denoted by the verb by locating it in time. Thus, TP is projected above AspectP in sentences; in noun phrases, DP can be projected above AspectP, too. But DP does not project over TP. The genitive marker is located at D and assigns genitive case to the phrase occupying Spec, DP (Chomsky 1995).

In (46), below AspectP, VoiceP introduces the external argument (see Section 1.1) and vP introduces the internal argument. In the derivation, the Root  $\sqrt{\text{DESTROY}}$  undergoes head-movement to v, to Voice, and then to Aspect, so as to be categorized by v and to support the *-ing* morpheme. The external argument *the enemy* moves from Spec, vP to Spec, AspectP and then to Spec, DP, so that it can receive genitive case from D. As the verb *destroy* is not nominalized, no *of* insertion is required. The processes involved in the derivation of (45) are illustrated below.

---

<sup>26</sup> The question is due to Prof. Yang Gu (personal communication).

(47)



In sum, the DM account for English AS-nominals contends that there are both nominal and verbal projections in AS-nominals. In contrast, simple event nominals and result nominals do not have verbal projections. Gerundive nominals contain an even larger verbal projection (i.e., AspectP). The similarity among all the four types of nominals is that they are all derived from category-neutral Roots. The structures proposed for English derived nominals and gerundive nominals receive further support from cross-linguistic studies.

### 2.3.3 Boundedness in the nominal and verbal domain

In order to verify the structures proposed for English derived nominals and gerundive nominals, we need to examine data from other languages. The following discussion has several purposes: it further exemplifies the syntactic mechanism proposed in DM and enriches the structure of AS-nominals discussed in Section

2.3.2; it exemplifies the interaction of the nominal and verbal projections within AS-nominals, providing additional support to the syntactic analysis of AS-nominals in DM; it contributes to our discussion on Mandarin AS-nominals in Chapter 4.

It is observed that AS-nominals can pluralize (Mourelatos 1978, and Borer 2005), as illustrated by the French example in (48) and the Romanian example in (49). This is contrary to Grimshaw's (1990) data in (50).

(48) les fréquentes destructions des quartiers populaires

‘the frequent destructions of popular quarters’ (Roodenburg 2006)

(49) demolările frecvente ale cartierelor vechi de către comuniști

demolish-Inf-Pl frequent-Pl of quarters-Gen old by communists

‘the frequent demolitions of old quarters by the communists’

(Adapted from Iordăchioaia and Soare 2008: 2(3))

(50) The frequent assignment(\*-s) of unsolvable problems is to be avoided.

(Adapted from Grimshaw 1990:50(8c))

Alexiadou et al. (2010) suggests that AS-nominals pluralize depending on the aspectual property of boundedness (see also Iordăchioaia and Soare 2008). We introduce notions related to boundedness first, and then discuss boundedness in nominals.

Boundedness applies to both nominal and verbal domains (Jackenoff 1991). It has long been observed that the mass-count distinction for entities is analogous to the telicity of events (Bach 1986, Leech 1969). Count nouns refer to entities such as apples that have natural boundaries. Mass nouns refer to entities like water



that do not have clear boundaries or shapes. Telic events are those that have a natural end point in time, such as reaching the top of a hill, which ends at the moment the climber arrives at the top.<sup>27</sup> Atelic events like sleeping can extend in time without limits and does not necessarily have an ending point. The count-mass distinction and telicity are both concerned with final endpoints but are applied in different domains: the count-mass distinction applies to the spatial domain while telicity applies to the temporal domain. The word “bounded” means that there is a boundary or an endpoint. Jackendoff (1991, 1996) proposes a [ $\pm$ bounded] feature to cover both mass-count distinction and telicity (see Table 2).

Table 2 [ $\pm$ bounded] features for entities and events

Entity		Event
[+bounded]	[count] (e.g., <i>an apple</i> )	[telic] (e.g., <i>to reach the top</i> )
[-bounded]	[mass] (e.g., <i>water</i> )	[atelic] (e.g., <i>to sleep</i> )

Alexiadou’s (2007) study focuses on two types of nominalizations in Romanian: the infinitive and the supine.<sup>28</sup> As shown in (51), the infinitive marker is *-r* and the infinitive form of *a reproduce* can be plural (marked by *-i*). The example in (52) illustrates that the supine form marked by *-s* (or *-t* in (54)) cannot pluralize.

<sup>27</sup> Verbs are classified into states, activities, accomplishments, and achievements (Ryle 1949, Vendler 1957/1967). Walking uphill is an activity; its subevents satisfy the same description as the activity itself and have no natural finishing point. Climbing the hill is an accomplishment; it may have a culmination when the climber reaches the top. Reaching the top of a hill is an achievement; it culminates the moment the climber reaches the top and thus is instantaneous. A state, such as knowing a story, may extend over time and may never have an endpoint. States and activities are atelic in that they may not have endpoints; accomplishments and achievements are telic in that they typically contain finishing points (Kenny 1963; Vendler 1967; Dowty 1979).

<sup>28</sup> The contrast between the infinitive and the supine nominals in Romanian is similar to the contrast between the derived nominals and gerundive nominals in English. That is, the infinitive nominals have more nominal properties while the supine nominals have more verbal properties. Examples are provided shortly.

(51) Infinitive:

*a reproduce* → reproduce-**r** -**e** / reproduce-**r** -**i**

to reproduce → reproduce-Inf-Fem.Sg / reproduce-Inf-Pl

(52) Supine:

*a reproduce* → reprodu-**s** / \*reprodu -**s** -**uri**

to reproduce → reproduce-Sup / reproduce-Sup-Pl

(Iordăchioaia and Soare 2008:3 (4))

The following two examples show that the infinitive nominalization can be counted with ‘one’ but the supine cannot. These data further confirm that the infinitive is countable but the supine is not.

(53) O spălare a(le) rufelor distruge țesătura. (infinitive)

one wash-Inf of laundry-Gen destroys fabric-the

‘One washing of the laundry destroys the fabric.’

(54) \*Un spălat al rufelor distruge țesătura. (supine)

one wash-Sup of laundry-Gen destroys fabric-the

(Both from Iordăchioaia and Soare 2008: 4 (8))

The telicity of the verbal heads and the plurality of the corresponding nominals are interrelated (Alexiadou et al. 2010, Cornilescu 2001, Iordăchioaia and Soare 2008).<sup>29</sup> Cornilescu (2001) observes that verbs denoting atelic events can

---

<sup>29</sup> We use “verbal heads” as a convenient term to refer to the verbs contained in derived nominals. Strictly speaking, in the DM framework, these “verbal heads” are derived from Roots and verbalizing functional categories.

form the supine but not the infinitive, suggesting that the infinitive nominalization is incompatible with atelicity.

(55)	verb	Infinitive	Supine
	a. <i>a călători</i> ‘to travel’	*călătorirea	călătoritul
	b. <i>a locui</i> ‘to live’	*locuirea	locuitul
	c. <i>a munci</i> ‘to work’	*muncirea	muncitul
	d. <i>a râde</i> ‘to laugh’	*râderea	rîsul

(Cornilescu 2001: 489 (48))

Verbs denoting both telic and atelic events can form the supine, as shown by the telic reading ‘to reproduce’ in (52) and the atelic reading of the verbs in (55). In addition, nominals in the supine form always denote atelic events, even when the verbal head is telic, such as ‘to arrive’ (an achievement) and ‘to eat breakfast’ (an accomplishment) in (56) below. The English translation uses ‘the habit of’ to indicate that the nominals in (56) refer to repeated events that do not have natural ending points. As mentioned before, the supine cannot pluralize, including the examples in (56).

(56)	a.	sositul	lui	Ion	cu	întîrziere
		arrive-Sup-the	John-Gen	with	delay	
		‘John’s (habit of) arriving late’				
	b.	mîncatul	micului	dejun pe terasă		
		eat-Sup-the	breakfast-Gen	on terrace		
		‘(the habit of) having breakfast on the terrace’				

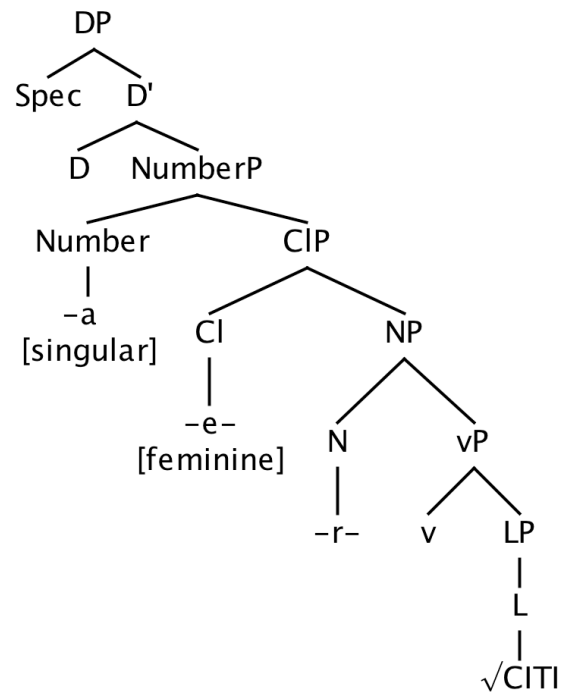
In short, only verbal heads that denote telic events can form infinitive AS-nominals and these AS-nominals can all pluralize. Both telic and atelic verbal heads can enter the supine nominalization; the supine nominalization produces noun phrases denoting atelic events and such nominals cannot be pluralized.

Alexiadou et al. (2010) considers that the plural marking in noun phrases is realized by the functional head Number (see also Alexiadou 2001, 2005, Picallo 2006). Thus, the infinitive AS-nominal should have the NumberP projection and the supine should not. Cl(assifier) is associated with the [count] feature (Alexiadou et al. 2010, Fassi Fehri 2005). The Cl head individualizes the entities denoted by the noun so that they can be counted. Hence, the Number projection depends on Cl; without Cl, the denotation of the noun is not countable and the NumberP projection is not possible. The structure of the infinitive *citirea* ‘reading’ is given below.<sup>30</sup> The [feminine] feature under the Cl head means that Romanian classifiers inflect for gender.

---

<sup>30</sup> This structure is similar to the structure of English derived nominals discussed in Section 2.3.2. The difference is that the structure in (57) contains two additional projections, NumberP and CIP. Their existence is justified by the overt morphemes in Romanian.

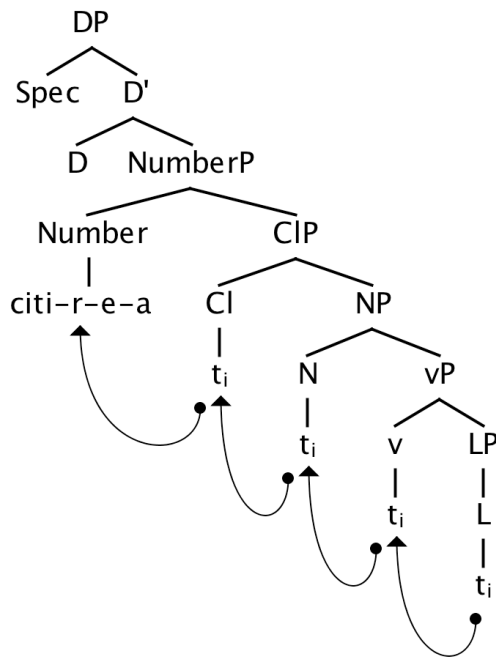
(57)



(Based on Alexiadou et al. 2010: 9 (16))

After the head-movements of  $\sqrt{\text{CITI}}$ , the noun *citirea* ‘reading’ is derived, as illustrated below.

(58)



The correlation between the mass-count distinction and telicity discussed above supports the structures in (57) and (58). As both Cl and v are present in (57), their boundedness features should match each other (Alexiadou et al. 2010). As Cl is [count], it follows that v should be [telic]. Therefore, the structure in (57) correctly predicts that only Roots denoting telic events can form the infinitive.

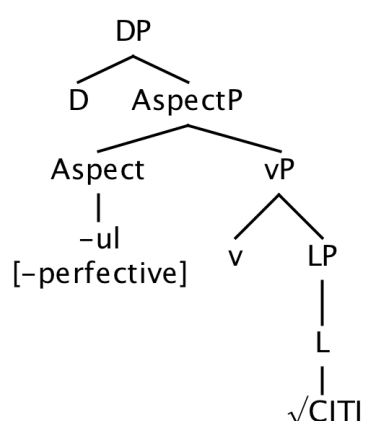
In Romanian, the supine exhibits more verbal features than the infinitive, such as allowing adverbial modification. In this sense, the supine (e.g., (59)) is more like the English gerundive nominals (e.g., (60)) than the English derived nominals.

- (59) cititul                      constant              al ziarelor  
       read-Sup-the            constantly            newspapers-Gen  
       ‘constantly reading newspapers’

(60) their constantly reading newspapers

As the supine always has the imperfective aspect, the supine marker is treated as the head of Aspect.<sup>31</sup> The Romanian supine *cititul* ‘reading’ in (59) has the following structure (based on the analysis of Alexiadou et al. 2010).

(61)



The absence of Cl and Number projections in (61) is justified by the absence of nominal features like adjectival modification and the impossibility of plural marking (Alexiadou et al. 2010). As there is no Cl projection in the structure of the supine, it is correctly predicted that there is no requirements on the type of Roots in (61); that is, Roots denoting telic and atelic events should both be able to enter the structure of (61). This is exactly what has been observed in (52) and (55).

---

<sup>31</sup> Telicity and perfectivity pertain to situation aspect (or Aktionsart, inner aspect) and viewpoint aspect (or grammatical aspect, outer aspect), respectively (Smith 1991, Verkuyl 1993, among others). The former concerns whether an event has an inherent endpoint or not. The latter concerns the temporal flow of a given event or state from the point of view of the speaker.

Coming back to English, if the structure proposed in (46) is correct (i.e., DP over AspectP, without NumberP), following the discussion on Romanian, the English gerundive nominals should not have plural forms. This prediction is born out.

(62) the enemy's destroying(\*-s) the city

Additionally, the English gerundive nominals should allow verbal heads (e.g., *kill* in (63) and *swim* in (64)) denoting both telic and atelic events. Killing an enemy is a telic event and swimming in the ocean is atelic. As shown below, both of them can form gerundive nominals.

(63) **His killing the enemy** surprised us.

(64) **His swimming in the ocean** surprised us.

The structure of English AS-nominals in (34) does not have Cl projections, because there is no morphological evidence for Cl in English AS-nominals. With the Cl projection absent, there should be no requirement on the telicity encoded in v. Thus, based on the discussion on Romanian, we predict that the English AS-nominals allow both telic and atelic Roots. This prediction is also correct. The AS-nominals in (65) and (66) denote telic and atelic events, respectively.

(65) the arrival of the train

(66) the examination of the patient



The telicity of (65) and (66) is confirmed by their compatibility with the *in/for*-phrases. Telic events can be modified by *for*-phrases, while atelic events can be modified by *in*-phrases (Rothstein 2004, Vendler 1957, 1967). As shown below, *the arrival of the train* is compatible with *in a minute* and thus should be telic; *the examination of the patient* is compatible with *for an hour* and thus should be atelic.

(67) the arrival of the train in a minute / \*for a minute

(68) the examination of the patient \*in a hour / for an hour

In conclusion, the DM approach provides a systematic and consistent analysis to derived nominals and gerundive nominals in English and other languages. Based on our observation of Mandarin derived nominals in Chapter 3, we show that the DM approach provides the answer to the differences in argument-taking properties of derived nominals in Mandarin and English that we have mentioned in Section 1.2.

## 2.4 Summary

To sum up, in the generative literature on AS-nominals, there are three major approaches: the transformationalist approach, the lexicalist approach, and the syntactic approach. The transformationalist approach (Lees 1960) is formulated in an older framework and faces serious problems in the current frameworks. The lexicalist approach (represented by Chomsky 1970) takes AS-nominals as derived in the lexicon and takes gerundive nominals as generated in syntax. The lexicalist approach cannot provide a systematic analysis for both the derivational nominalizing morpheme and the gerundive morpheme; but the syntactic approach

can. DM, a syntactic approach, considers that all these nominalizing morphemes are syntactic heads; their difference lies in the type of syntactic structure that they nominalize. DM provides a more elegant account for derived nominals than the lexicalist approach, for DM eliminates the necessity of having a nominalization process in the lexicon, which is similar to the nominalization process in syntax.

Crucial support for the syntactic approach comes from evidence showing the possibility of adverbial modification in AS-nominals. Such evidence suggests that there are underlying verbal structures in AS-nominals (see Section 2.3.1). If the semantic heads of AS-nominals enter syntax as nouns, there would be no verbal structures inside AS-nominals and adverbial modification would be impossible. The DM approach argues that AS-nominals are derived from category-neutral Roots and functional categories. An AS-nominal has both nominal and verbal projections. The lower verbal projection accounts for the argument structure of AS-nominals and the possibility of adverbial modification (in some languages). The support for the existence of both the nominal and verbal domains in AS-nominals comes from the requirement on the type of Roots in Romanian infinitive nominalization. In brief, the [+bounded] Cl requires that the *v* should also be [+bounded]. Thus, only Roots denoting telic events (which is [+bounded]) can form AS-nominals in Romanian. In this way, the DM approach to AS-nominals provides a systematic analysis for cross-linguistic data.

In the next chapter, we turn to Mandarin derived nominals. We will see that Mandarin is similar to but also different from English in various aspects.

### Chapter 3 Derived nominals in Mandarin

In this chapter, we present our observation on Mandarin derived nominals, which is partly based on comparisons between Mandarin and English. Based on our observations, we evaluate previous analyses on Mandarin derived nominals. We argue that the syntactic approach to Mandarin derived nominals has important advantages over other approaches.

Before going into the discussion, we revisit the basic descriptive terms. In Chapter 2, we have introduced terms like “AS-nominals” (Borer 2003, Grimshaw 1990) that refer to event-denoting derived nominals with argument structure, as well as “result nominals” that refer to entity-denoting derived nominals without argument structure. Derived nouns are the semantic heads of derived nominals. Derived nouns that denote events and take arguments are also referred to as “AS-nouns” (Borer 2003); nouns that denote events but do not have argument structures are “simple event nouns”; derived nouns that denote entities are “result nouns.” In this chapter, we still use “derived nominals” as a cover term for noun phrases that have a derivational relation with verbs/verb phrases. For example, the Mandarin noun phrases in (1) and (2) are derived nominals; their semantic heads are derived nouns *diaocha* ‘investigation’ and *chuban* ‘publication’, respectively.

- (1) Zhangsan dui Lisi de diaocha (= (13) in Chapter 1)

Zhangsan DUI Lisi DE investigation

‘Zhangsan’s investigation of Lisi’

- (2) zhe ben shu de chuban (= (14) in Chapter 1)

this CL book DE publication

‘the publication of this book’

This chapter is organized as follows. In Section 3.1, we examine the syntactic behavior of Mandarin derived nominals. We show that Mandarin has AS-nominals and we figure out what kind of Mandarin derived nominals are AS-nominals. In Section 3.2 and Section 3.3, various approaches to Mandarin derived nominals are examined. We argue that the syntactic approach is more advantageous than the lexicalist approach, as it captures the similarities and differences between derived nominals in Mandarin and English. We also discuss the inadequacies in previous syntactic analyses (Fu 1994, Simpson 2002) on Mandarin derived nominals. Our analysis on Mandarin derived nominals is given in Chapter 4.

### 3.1 Observation and generalization

As a preparation for the review of previous analyses, we look at the basic syntactic behavior of Mandarin derived nominals. These observations also pave the way for our analysis in Chapter 4.

Nouns and verbs in Mandarin are not morphologically distinguished as they are in English.<sup>32</sup> English employs affixes like *-tion* and *-ment* to mark certain nouns (e.g., *examination* and *employment*) and affixes like *-ize* to mark certain verbs (e.g., *pluralize*). Many Mandarin nouns and verbs are homophonous; they share the same phonological form. The derived nouns under discussion are typical examples. *Diaocha* is a noun in (3) (to be proved shortly) and a verb in (5); *chuban* is a noun in (4) and a verb in (6).

---

<sup>32</sup> Whether adjectives in Mandarin constitute a separate category is not the focus of our discussion. See Guo (2012) and references therein for discussion.

(3) Zhangsan dui Lisi de diaocha (= (1))

Zhangsan DUI Lisi DE investigation

‘Zhangsan’s investigation of Lisi’

(4) zhe ben shu de chuban (= (2))

this CL book DE publication

‘the publication of this book’

(5) Zhangsan diaocha-le Lisi.

Zhangsan investigate-ASP Lisi

‘Zhangsan has investigated Lisi.’

(6) Zhe ben shu chuban-le.

this CL book publish-ASP

‘The book has been published.’

Different analyses have been proposed to resolve this noun-verb distinction dilemma (e.g., Gao 1955, Guo 2002, Li 1924, Lü 1954, Shen 2009, Xing 2001, Zhu 1985a,b). Gao (1955) argues that Mandarin does not have noun-verb distinction, for there are no morphological markings that distinguish them. Zhu (1985a,b) proposes determining word category based on the primary grammatical function (e.g., subject or predicate) of a word, but also considers that a word may have more than one grammatical function (e.g., the same noun may function as an argument or a predicate without changing morphological form). So there is a question as to how to determine which grammatical function determines the category of a particular word. Li (1924/1992) considers that the context determines whether a lexical item is a noun or a verb. But there is no clear explication what is meant by the determination of context and how part of the unconscious linguistic

knowledge a speaker possesses about the grammar of his/her language gets determined by the context.

The DM framework assumes category-neutral Roots as basic lexical items (see Chapter 2). Roots will become nouns or verbs after they move to category-determining functional heads. So the controversies in Mandarin noun-verb distinction can be resolved by functional projections in the DM framework. Roots are verbalized if they merge with verbal functional heads (e.g., *v*) and can be further nominalized to form a derived noun. In other words, a derived noun in Mandarin involves a Root and other functional heads, just like derived nouns in English. The difference between the two languages is that, in Mandarin, the relevant functional heads are phonologically null, whereas in English, they may be phonologically realized as nominalizing affixes such as *-tion*. In the following discussion, we use “noun” and “verb” to refer to the product of Roots merged with nominal and verbal functional heads, respectively; the noun functioning as the semantic head of a noun phrase is called the “head noun.”

### 3.1.1 Preliminary observation of Mandarin derived nominals

In this subsection, we examine the basic properties of the derived nominals in Mandarin. We use diagnostics to prove that Mandarin derived nominals have the same syntactic distribution as noun phrases rather than verb phrases.<sup>33</sup>

---

<sup>33</sup> Aoun and Li (2003) suggest that Mandarin *he* conjoins nominal elements. For instance,

(i) pingguo he xiangjiao  
apple and banana  
‘apples and bananas’

If Mandarin *he* conjoins nominal but not verbal or clausal elements, we can use this *he* ‘and’ as a diagnostic for nominals. However, in the following sentence, *he* conjoins two verbs.

(ii) Tamen **goumai** he **yunshu**-le yi pi huowu.  
they buy and transport-ASP a CL product  
‘They bought and transported a batch of product.’ (Based on Feng 2010)

Since it cannot be confirmed that Mandarin *he* only conjoins nominals, we do not use *he* conjunction as a test.

It is widely accepted that the phrase introduced by Mandarin *ba* in the disposal construction introduces a noun phrase (e.g., Li and Thompson 1981), such as *shu* ‘book’ in (7).

- (7) Zhangsan ba shu jiaogei-le wo.  
Zhangsan BA book give-ASP me  
‘Zhangsan gave the book to me.’

Mandarin derived nominals can function as the object of Mandarin *ba*, indicating that they have a similar syntactic distribution as *shu* ‘book’ in (7) (derived nominals are boldfaced in (8) and (9)).<sup>34</sup>

- (8) Ta yijing ba **gongsi de chengli** anpai hao-le.  
she already BA company DE establishment arrange well-ASP  
‘She has already arranged the establishment of the company.’
- (9) Ta yijing ba **Zhangsan dui Lisi de diaocha** anpai hao-le.  
she already BA Zhangsan DUI Lisi DE investigation arrange well-ASP  
‘She has already arranged Zhangsan’s investigation of Lisi.’

The second test is the equative *shi* ‘be’.<sup>35</sup> The copular verb *shi* ‘be’ in Mandarin has an equative use (Jiang and Pan 1998). When the equative *shi* ‘be’ connects two elements with the same reference, the two elements are nominals, as

---

<sup>34</sup> I thank Prof. Gu for reminding me of the test with Mandarin *ba*.

<sup>35</sup> This test is borrowed from Gu and Guo (2010).

only nouns have reference.<sup>36</sup> The two elements connected by *shi* ‘be’ in (10) and (11) can switch their positions, suggesting that this *shi* ‘be’ is equative.<sup>37</sup>

- (10) **Zhangsan dui Lisi de diaocha**                      shi      wo jian du de.  
                  Zhangsan DUI Lisi DE investigation      be      I    supervise DE  
                  ‘Zhangsan’s investigation of Lisi was supervised by me.’
- (11) Wo jian du de shi      **Zhangsan dui Lisi de diaocha.**  
                  I    supervise DE be      Zhangsan DUI Lisi DE investigation  
                  ‘What I supervised was Zhangsan’s investigation of Lisi.’

As the equative *shi* ‘be’ connects two nominals, the examples in (10) and (11) prove that the derived nominal *Zhangsan dui Lisi de diaocha* ‘Zhangsan’s investigation of Lisi’ is indeed a noun phrase. An additional pair of examples is provided below.

- (12) **Zhe ben shu de chubān**                      shi      Zhangsan fū zé      de.  
                  this CL book DE publication      be      Zhangsan in.charge DE  
                  ‘This book’s publication was in the charge of Zhangsan.’
- (13) Zhangsan fū zé      de      shi      **zhe ben shu de chubān.**  
                  Zhangsan in.charge DE be      this CL book DE publication  
                  ‘What Zhangsan was in charge of was this book’s publication.’

---

<sup>36</sup> I owe this point to Jie Guo (personal communication).

<sup>37</sup> Mandarin copular verb *shi* ‘be’ may be predicational (see (i)).

(i) Zhangsan shi xuēshēng.  
                  Zhangsan be student  
                  ‘Zhangsan is a student.’

The predicational *shi* does not allow the subject and the predicate to switch positions (Jiang and Pan 1998), as shown in (ii).

(ii) \*Xuēshēng shi Zhangsan.  
                  student be Zhangsan



The third test is Mandarin *bi* ‘compare’. According to Gu and Guo (2010), the compared elements in Mandarin comparative constructions are nominals.<sup>38</sup> We show that Mandarin derived nominals can function as one of the compared elements in the comparative construction.

- (14) **Zhangsan de daoda** bi **Lisi de likai** geng rang wo yihuo.

Zhangsan DE arrival BI Lisi DE departure more make me puzzled  
 ‘Zhangsan’s arrival makes me more puzzled than Lisi’s departure.’

- (15) **B gongsi de chengli** bi **A gongsi de daobi** geng xunsu.

B company DE establishment BI A company DE bankrupt more quick  
 ‘B company’s establishment was quicker than A company’s bankruptcy.’

---

<sup>38</sup> Gu and Guo (2010) provide semantic and syntactic evidence for the nominal status of the compared elements in Mandarin comparative constructions. Lyons (1977) divides nominals into first order nominals, second order nominals, and third order nominals. The compared elements in (i) to (iii) refer to entities, events, and propositions, respectively, corresponding to the classification of nominals by Lyons.

(i) **Zhangsan** bi **Lisi** gao.  
 Zhangsan BI Lisi tall  
 ‘Zhangsan is taller than Lisi.’

(ii) **Tui** bi **la** qingsong.  
 push BI pull easy  
 ‘Pushing is easier than pulling.’

(iii) **Wo qu Beijing** bi **ni qu Beijing** heshi.  
 I go Beijing BI you go Beijing appropriate  
 ‘It’s more appropriate for me to go to Beijing than for you to go to Beijing.’

(All from Gu and Guo 2010)

The syntactic evidence comes from the equative *shi* ‘be’ construction. As argued shortly before, the equative *shi* ‘be’ connects two nominals (Gu and Guo 2010, Jiang and Pan 1998). The examples in (iv) and (v) show that the compared elements *tui* ‘push’ and *la* ‘pull’ can function as one of the elements connected by equative *shi* ‘be’. Thus, the compared elements are nominals.

(iv) **Wo yao de shi tui** bu shi **la**.  
 I want DE be push not be pull  
 ‘What I want is pushing not pulling.’

(v) **Tui** shi wo yao de, **la** bu shi.  
 push be I want DE, pull not be  
 ‘Pushing is what I want; pulling is not.’

In short, the three tests suggest that Mandarin derived nominals have the same syntactic distribution as other Mandarin noun phrases.

The internal word order of Mandarin derived nominals is in accordance with that of ordinary Mandarin noun phrases (those headed by concrete nouns like *shu* ‘book’). The head nouns of Mandarin noun phrases appear in the final position of the noun phrase. For example, in (16), *shu* ‘book’ is the head noun and it is located at the right edge of the whole phrase.

- (16) Zhangsan fangzaizhuozi shang de shu  
Zhangsan put desk surfaceDE book  
‘the book that Zhangsan put on the desk’

Similarly, in Mandarin derived nominals, the head noun is at the right edge. This is already exemplified in previous examples like (1), (2) and (13) of this section.

Hence, Mandarin derived nouns exemplify mixed properties: they seem to have argument structures, which is similar to verbs, but they are comparable to ordinary Mandarin noun phrases in terms of their syntactic distribution in sentences and in terms of internal word order.

In this subsection, the basic syntactic behavior of Mandarin derived nominals is examined. We conclude that Mandarin derived nominals are indeed noun phrases based on their syntactic distribution. Yet this does not mean that the internal structure of derived nominals cannot contain any verbal projections. This is because whether a phrase has the syntactic distribution of verb phrases or noun phrases is determined by the highest functional projection a Root eventually merges into, if we cast the structure in the DM framework. In other words, even if

there is certain verbal projection in the derived nominal, the phrase as a whole can still be nominal if its highest projection is a nominal functional category (e.g., D). Thus, it is possible that the semantic head of the derived nominal is a verb (syntactically derived from a verbalizing functional category and a Root) or a nominalized verb. In the next subsection, we further investigate the syntactic properties of the semantic heads of derived nominals.

### 3.1.2 The derived NOUN

During the pre-DM era, the word category of the semantic heads of derived nominals caused much debate. Some scholars argued that they were verbs (Cheng 1999, Hu and Fan 1994, Zhang 1993, Zhu 1982, 1985, Zhu, Lu, and Ma 1961, among others). The crucial data in their analysis are examined in Section 4.2. We show that they are different from derived nominals; hence, whether the semantic heads of those data are nouns or verbs does not affect our analysis on derived nominals.

In more recent studies, there are also arguments that the semantic heads of derived nominals are nouns (Chen 1987, Fu 1994, Guo 2002). Fu (1994) held the view that derived nouns are nominalized verbs (see Section 3.3.1). Guo (2002) argues that, in Mandarin, there are pure nouns (e.g., *ren* ‘human being’) and pure verbs (e.g., *ku* ‘cry’), and there are also words that belong to both nouns and verbs (e.g., *diaocha* ‘investigate’ or ‘investigation’). According to Guo (2002), the semantic heads of derived nominals belong to the last group; they are nouns in derived nominals and they are verbs when functioning as predicates in sentences. We agree with his observation, which receives a more systematic explanation in the DM framework (see Section 4.1). Based on previous studies (e.g., Fu 1994) and

our observations, we provide diagnostics for the nominal status of the semantic heads of derived nominals.

First of all, the absence of aspect markers indicates that the semantic head of a derived nominal is a noun (see also Fu 1994).<sup>39</sup> *Bangzhu* can be followed by an aspect marker *le* in sentence (17), but not in a derived nominal (see (18)). As aspect markers apply to verbs rather than nouns, the contrast between (17) and (18) indicates that *bangzhu* in (18) is not a verb.

(17) Zhangsan bangzhu-le Lisi.

Zhangsan help-ASP Lisi

‘Zhangsan helped Lisi.’

(18) Zhangsan dui Lisi de bangzhu-(\*le)

Zhangsan DUI Lisi DE help-ASP

‘Zhangsan’s help to Lisi’

A similar case with *chengli* ‘establishment’ is provided below.

(19) Gongsì chengli-le.

company establish-ASP

---

<sup>39</sup> This evidence alone does not prove the semantic head is not a verb. As Xin Zu (personal communication) correctly points out, there may be other reasons for the absence of aspect markers (see also Zhu 1982, 1985a). For example, in Mandarin serial verb constructions, no aspect markers can be added to the second verb.

(i) Ta mingling Zhangsan chi-(\*le) dongxi.

he order Zhangsan eat-ASP thing

‘He ordered Zhangsan to eat something.’

It is the co-occurrence of all the nominal properties discussed in this subsection that argue for the nominal status of the semantic head of derived nominals. Moreover, the systematic contrast between derived nominals and gerundive nominals in Mandarin (see Section 4.2) confirms our conclusion. In brief, the data showing that the semantic heads of some Mandarin nominals have verbal properties belong to gerundive nominals. The distinction between gerundive nominals and derived nominals in Mandarin is justified by their semantic differences (see Section 4.2).

‘The company was established.’

(20) Gongsi de chengli-(\*le) rang women hen gaoxing.

company DE establish-ASP make us very happy

‘The establishment of the company made us very happy.’

Secondly, the semantic head cannot assign case to its internal argument (Fu 1994). As shown in sentence (17) above, the word order is subject-verb-object; but in derived nominals, *Lisi* cannot be in the complement position of *bangzhu* as there is no structural case available in that position (see (21)). The case of the internal argument *Lisi* is assigned by Mandarin preposition *dui*, as shown in (22). This indicates that *bangzhu* has lost the ability to assign case to its theme argument. The lack of case-assignment ability indicates that the semantic head in derived nominals should not be a verb and there is no compelling reason for us to say that it cannot be a noun.

(21) \*Zhangsan de bangzhu Lisi

Zhangsan DE help Lisi

(22) Zhangsan dui Lisi de bangzhu

Zhangsan DUI Lisi DE help

‘Zhangsan’s help to Lisi’

Thirdly, temporal phrases describing frequency (e.g., *liang ci* ‘twice’) and duration (e.g., *yi nian* ‘one year’) must precede the derived noun (Fu 1994). In (23) and (24), the (a) examples show that temporal phrases follows verbs in sentences;

the contrast between (b) and (c) examples show that temporal phrases precede derived nouns.

(23) a. Zhe ben shu chuban-le liang ci.

this CL book publish-ASP two CL

‘This book was published twice.’

b. \*zhe ben shu de chuban liang ci

this CL book DE publish two CL

c. zhe ben shu de liang ci chuban

this CL book DE two CL publish

‘this book’s being published twice’

(24) a. Zhangsan bangzhu-le Lisi yi nian.

Zhangsan help-ASP Lisi one year

‘Zhangsan helped Lisi for one year.’

b. \*Zhangsan dui Lisi de bangzhu yi nian

Zhangsan DUI Lisi DE help one year

c. Zhangsan dui Lisi de yi nian bangzhu

Zhangsan DUI Lisi DE one year help

‘Zhangsan’s helping of Lisi for one year’

The word order in the (c) examples above is similar to that in ordinary Chinese noun phrases, which are also [number + classifier + noun] as illustrated by *san zhang heyin* in (25). Thus, *chuban* ‘publication’ and *bangzhu* ‘help’ in (23) and (24) are more similar to nouns than to verbs.

- (25) Zhangsan gen women de san zhang heyings  
 Zhangsan with us DE three CL group.photo  
 ‘the three group photos of Zhangsan and us’

Fourthly, adjectival modifiers point to the nominal status of the semantic head. In (26), the semantic head *shencha* ‘investigation’ is modified by an adjective *da* ‘large in scale’.<sup>40</sup>

- (26) Zhangsan dui Lisi de da shencha  
 Zhangsan DUI Lisi DE large.in.scale investigation  
 ‘Zhangsan’s extensive investigation of Lisi’

The essential data involve the contrast between (27) and (28), which show that *da* cannot modify *shencha* when *shencha* is used as a verb.

- (27) \*Zhangsan da shencha -le Lisi.  
 Zhangsan large.in.scale investigate-ASP Lisi  
 (28) Zhangsan shencha -le Lisi.  
 Zhangsan investigate-ASP Lisi  
 ‘Zhangsan investigated Lisi.’

---

<sup>40</sup> This piece of evidence is inspired by the discussion and data in Shi (2008). Shi (2008) assumes that *da* ‘large in scale’ is a modifier modifying *shencha* ‘investigation’. We consider it to be more appropriate that *da shencha* is analyzed as a compound. The reason is that *da* and *shencha* cannot be separated by anything (e.g., Mandarin modification marker *de* in (i)).

(i) \*Zhangsan dui Lisi de da shencha  
 Zhangsan dui Lisi de large.in.scale DE investigation

In (26), *da shencha* may be a phrase consisting of a modifier and a modifiee, or it may be a compound (see footnote 40). Both analyses support our proposal that *shencha* is a noun in the derived nominal. If *da* ‘large in scale’ is considered to form a compound with *shencha*, example (27) shows that this compound cannot function as a verb; therefore, *da shencha* in (26) is a compound noun. In other words, the semantic head of the derived nominal in (26) is a noun. If *da* ‘large in scale’ is analyzed as the modifier of *shencha*, (27) shows that this modificational phrase cannot be verbal. In either case, the conclusion is the same: the semantic head of the derived nominal in (26) is a noun.

In sum, our observation suggests that the semantic heads of derived nominals are nouns. Under the DM framework, there are two logical possibilities explicating the nominal nature of the head noun of derived nominals: a Root head-moves to a nominalizing functional category and becomes a noun; or, a Root moves to a verbalizing functional head and then further moves to a nominalizing head to become a noun. The difference lies in the presence and absence of verbal projections such as vP and AspP. To decide which possibility correctly explains the observed phenomenon in Mandarin derived nominals, we should check whether Mandarin derived nominals have verbal properties. If derived nominals exhibit no verbal behavior at all, there is no motive for postulating underlying verbal projections for derived nominals; however, if there is evidence for verbal features in derived nominals, there should be underlying verbal projections, even though the semantic head is a noun in the final string. We consider that the argument structure of (a type of) Mandarin derived nominals points to underlying verbal projections. In the following, we take a closer look into this matter.



### 3.1.3 The argument structure of derived nominals

Recall that an important support for the argument structure of English AS-nominals is that they obligatorily take internal arguments (Grimshaw 1990). The “arguments” of Mandarin derived nominals seem to behave differently from the arguments in English derived nominals.

Some data appear to indicate that the internal argument is not obligatory for Mandarin derived nouns. The theme argument *zhe ge wenti* ‘this issue’ in (29) and (30), as well as *diren* ‘enemy’ in (31) can be omitted.

(29) Women (dui zhe ge wenti) de taolun      jinxing-le    san    ge xiaoshi.  
we            DUI this CL issue DE discussion go.on-ASP three CL hour  
‘Our discussion of this issue lasted three hours.’

(30) Women (dui zhe ge wenti) de yanjiu    jinxing-le    san    tian.  
we            DUI this CL issue DE study    go.on-ASP three day  
‘Our study of this issue lasted three days.’

(31) Women (dui diren) de gongji    jinxing-le    san    tian.  
we            DUI enemy DE attack    go.on-ASP three day  
‘Our attack of the enemy lasted three days.’

According to Grimshaw’s (1990) classification, such data suggest that *taolun* ‘discussion’ in (29), *yanjiu* ‘study’ in (30), and *gongji* ‘attack’ in (31) are not AS-nouns. They should be simple event nouns, which denote events but do not have argument structures. The examples in (32) further confirm that they are simple event nouns. In (32), the noun phrases headed by *taolun* ‘discussion’, *yanjiu* ‘study’, and *gongji* ‘attack’ do not contain any arguments at all.

(32) Taolun / diaocha / gongji jinxing-le san ge xiaoshi.

discussion investigation attack carry.on-ASP three CL hour

‘The discussion/investigation/attack went on for three hours.’

The optionality of the internal arguments in (29) to (32) suggests that these derived nouns are simple event nouns. *Women* ‘us’ in (29) to (31) is an adjunct (cf. *our* in *our attack of the enemy* discussed in Section 2.3).

In (29) to (31), *women* ‘us’ and *diren* ‘the enemy’ are not arguments of the derived noun and do not signal the presence of argument structure. According to Marantz (1997), the possessors in noun phrases can be understood as agents due to semantic interpretation and world knowledge. Syntactically, the possessors are not projected as arguments of the semantic heads. For example, in (33), *huiyi* ‘conference’ is a simple event noun, as it denotes an event of a conference (see (34)), and it can take a possessor *tamen* ‘they’, but it cannot be used as a verb (see (35)).

(33) Tamen de huiyi hen chenggong.

they DE conference very successful

‘Their conference was very successful.’

(34) Huiyi hen chenggong.

conference very successful

‘The conference was very successful.’

(35) \*Tamen huiyi-le.

they conference-ASP

Intended: ‘They held a conference.’

When the possessor *tamen* in (33) is semantically interpreted as the agent organizing a conference, this interpretation is not related to verbal projections, since there is no verbs or verbal projections in *tamen de huiyi* ‘their conference’. Similarly, the seeming arguments of the derived nouns in (29) to (31) do not mean that those derived nouns have argument structure. Instead, the optionality of those phrases proves that the derived nouns in (29) to (31) have no argument structure.<sup>41</sup>

But not all Mandarin derived nouns can do without arguments. At least one argument is required for some derived nouns, such as *chuban* ‘publication’ in (36), *chengli* ‘establishment’ in (37), and *xiaoshi* ‘disappearance’ in (38).

(36) \*(zhe ben shu de) chuban dedao henduo zhichi.

this CL book DE publication receive many support

‘The publication of this book has received many supports.’

(37) \*(gongsi de) chengli shi dajia nuli de jieguo.

company DE establishment is everyone effort DE result

‘The establishment of the company is the result of everyone’s effort.’

(38) \*(ta de) xiaoshi rang women hen shangxin.

he DE disappearance make us very sad

‘His disappearance made us very sad.’

---

<sup>41</sup> The fact that Mandarin allows *pro*-drop (Huang 1982, 1984) complicates the matter. One may argue that the optionality of the arguments in (29) to (32) is just apparent and that there are invisible *pro*’s in the derived nominals. If this is the case, the derived nominals in (29) to (32) should have argument structure.

But such an analysis cannot explain why the arguments in (36) to (38) cannot be covert *pro*’s. If *pro*-drop is allowed in (29) to (32), it should be possible in (36) to (38) as well. As *pro*-drop cannot account for the obligatoriness of the arguments in (36) to (38), we do not further consider this possibility for the data in (29) to (32).

Thus, some derived nouns have argument structure whereas some do not. Upon close scrutiny, we find that the distinction is systematic and it is correlated with the event type denoted by the verb/derived noun. The derived nouns that have optional “arguments” ((29) to (31)) denote activities, which are atelic events (i.e., events without inherent ending points). The head nouns in (36) to (38) denote accomplishments (*chuban* ‘publication’ in (36)) or achievements (*chengli* ‘establishment’ in (37) and *xiaoshi* ‘disappearance’ in (38)); these are telic events. This leads us to a preliminary generalization: in Mandarin, nouns derived from verbs denoting atelic events do not obligatorily take arguments, while nouns derived from verbs denoting telic events have obligatory arguments.<sup>42</sup>

We confirm our generalization by showing that whenever verbs denoting telic events appear in a nominal environment (where they must be nominalized), they obligatorily take arguments. In contrast, verbs denoting atelic events can be nominalized without taking any overt arguments. The diagnostics are Mandarin disposal marker *ba*, equative *shi* ‘be’, and *bi* ‘compare’ (see also Section 3.1.1).

The object of Mandarin *ba* is a nominal (Li and Thompson 1981). Mandarin *jianli* ‘establishment’ and *chusheng* ‘birth’ denote achievements, while *diao cha* ‘investigation’ is an activity, which is atelic. The examples in (39) and (40)

---

<sup>42</sup> The telicity effect we observe concerns the verb only, not including the object of the verb. This may seem questionable, for telicity is usually considered to be determined by the verb and the object together (e.g., Tenny 1994). We do not deny the influence on telicity by the object, but suggest that Mandarin verbs carry their own telicity information regardless of the object. For example, the difference between the atelic verb *xie* ‘write’ and the telic verb *chengli* ‘establish’ is revealed by the following data. While it is acceptable to say in Mandarin “I wrote a letter, but did not finish,” it is not acceptable to say “I established a company, but did not succeed.” It is the verb *chengli* ‘establish’ itself that carries the telic information in (ii).

- (i) Wo xie-le yi fen xing, keshi mei xiewan.  
I write-ASP a CL letter but not finish  
# ‘I wrote a letter, but did not finish’ (Based on observation in Yong 1997)
- (ii) # Wo chengli-le yi jian gongsi, keshi mei chenggong.  
I establish-ASP a CL company but not succeed  
# ‘I established a company, but did not succeed.’

demonstrate that the arguments of *jianli* ‘establishment’ and *chusheng* ‘birth’ cannot be omitted. This means the telic *jianli* ‘establishment’ and *chusheng* ‘birth’ obligatorily take arguments when they appear in a nominal environment (which is the object position of Mandarin disposal marker *ba*). In contrast, the arguments of the atelic *diaocha* ‘investigation’ are omissible (see (41)).

- (39) Tamen ba **\*(guojia de) jianli** fangzai diyiwei.  
 they BA country DE establishment put first.place  
 ‘They put the establishment of the country in the first place.’

- (40) Tamen ba **\*(haizi de) chusheng** fangzai diyiwei.  
 they BA baby DE birth put first.place  
 ‘They put the birth of the baby in the first place.’

- (41) Tamen ba **(Zhangsan dui Lisi de) diaocha** fangzai diyiwei.<sup>43</sup>  
 they BA Zhangsan DUI Lisi DE investigation put first.place  
 ‘They put Zhangsan’s investigation of Lisi in the first place.’

Tests with Mandarin equative *shi* ‘be’ reveal the same pattern. In the three pairs of examples in (42) to (44), the two elements connected by Mandarin *shi* ‘be’ can swap positions, indicating that it is indeed the equative *shi* ‘be’ in these examples. As Mandarin equative *shi* ‘be’ connects two nominals (Guo and Guo 2010), the examples in (42) and (43) demonstrate that as a derived noun, the telic *jianli* ‘establishment’ and *chusheng* ‘birth’ must take arguments. For the atelic *diaocha* ‘investigation’ in (44), the arguments are optional.

---

<sup>43</sup> Mandarin bare nouns may be interpreted as generic (Chao 1968). What concerns us here is the event interpretation of derived nouns. Therefore, we use *zhe ci* ‘this’ to make sure that *diaocha* is not interpreted as generic when the modifiers are omitted.

- (42) a. Dajia de mubiao shi **\*(guojia de) jianli**.  
 everyone DE aim be country DE establishment  
 ‘Everyone’s aim is the establishment of the country.’  
 b. **\*(Guojia de) jianli** shi dajia de mubiao.  
 country DE establishment be everyone DE aim  
 ‘The establishment of the country is everyone’s aim.’
- (43) a. Zui zhongyao de shi shi **\*(haizi de) chusheng**.  
 most important DE thing be baby DE birth  
 ‘The most important thing is the birth of the baby.’  
 b. **\*(Haizi de) chusheng** shi zui zhongyao de shi.  
 baby DE birth be most important DE thing  
 ‘The birth of the baby is the most important thing.’
- (44) a. Ta jiandu de shi shi **(Zhangsan dui Lisi de) diaocha**.  
 he supervise DE thing be Zhangsan DUI Lisi DE investigation  
 ‘What he supervises is the investigation of Lisi by Zhangsan.’  
 b. **(Zhangsan dui Lisi de) diaocha** shi ta fuze de shi.  
 Zhangsan DUI Lisi DE investigation be he supervise DE thing  
 ‘The investigation of Lisi by Zhangsan is what he supervises.’

Mandarin comparative constructions further confirm our observation: expressions denoting telic events cannot appear in comparative constructions without their arguments. For diversity, in the following examples, we use *daoda* ‘arrival’, *likai* ‘departure’, *chengli* ‘establishment’, and *daobi* ‘bankruptcy’, all of which are achievements.

(45) **\*(Zhangsan de) daoda bi \*(Lisi de) likai** geng rang wo yihuo.

Zhangsan DE arrival BI Lisi DE departure more make me puzzled

‘Zhangsan’s arrival makes me more puzzled than Lisi’s departure.’

(46) **\*(B gongsi de) chengli** bi **\*(A gongsi de) daobi** xunsu.

B company DE establishment BI A company DE bankruptcy quick

‘The establishment of B company is quicker than the bankruptcy of A company.’

For expressions denoting atelic events, they may appear in comparative constructions with or without arguments, as shown in (47) and (48), respectively. In (48), demonstratives and classifiers are added to make sure that the derived nouns refer to specific events (see footnote 43). Without the demonstratives and classifiers, the bare *diaocha* ‘investigation’ and *yanjiu* ‘study’ can be interpreted as generic, which is not comparable to the example in (47).

(47) **Ta dui Lisi de diaocha** bi **wo dui yuyan de yanjiu** rongyi.

he DUI Lisi DE investigation BI I DUI language DE study easy

‘His investigation of Lisi is easier than my study of language.’

(48) **Zhe ci diaocha** bi **na ci yanjiu** rongyi.

this CL investigation BI that CL study easy

‘This investigation is easier than that study.’

The tests above confirm our observation that verbs denoting telic events cannot be nominalized without taking overt arguments, whereas atelic verbs do not obligatorily take arguments when they are nominalized.

Verbs denoting telic events may have intransitive-transitive variations. As derived nouns, they only take one argument. The (a) and (b) examples below demonstrate that *chengli* ‘establish’ and *chuban* ‘publish’ can be intransitive or transitive verbs; the (c) examples illustrate that their derived nouns can have one argument in the noun phrases; the (d) examples show that their derived nouns cannot have two arguments.

- (49) a. Gongsì chengli-le.  
           company establish-ASP  
           ‘The company was established.’
- b. Ta chengli-le      zhe jian gongsì.  
           he establish-ASP this CL company  
           ‘He established this company.’
- c. gongsì      de chengli  
           company DE establishment  
           ‘the establishment of the company’
- d. \*ta dui zhe jian gongsì de chengli  
           he DUI this CL company DE establishment
- (50) a. Zhe ben shu chuban-le  
           this CL book publish-ASP  
           ‘This book has been published.’
- b. Tamen chuban-le    zhe ben shu.  
           they    publish-ASP this CL book  
           ‘They have published the book.’
- c. zhe ben shu      de chuban



this CL book DE publish  
 ‘the book’s publication’  
 d.\*tamen dui zhe ben shu de chuban  
 they DUI this CL book DE publication

We modify our observation and formulate the following generalization:

- (51) In Mandarin, derived nouns denoting atelic events do not obligatorily take arguments; derived nouns denoting telic events have one and only one argument in their derived nominals; external arguments do not appear in Mandarin derived nominals denoting telic events.

This generalization will contribute to the evaluation of various analyses on Mandarin derived nominals in Section 3.2 and Section 3.3, as well as our proposal in Chapter 4.

Moreover, our generalization predicts that, in Mandarin, Roots that denote atelic events do not form AS-nominals. This prediction is born out. Psychological states are atelic (Vendler 1957, 1967); hence, Roots describing psychological states should not form AS-nominals. Mandarin *xinshang* ‘admire’ and *ganji* ‘thank, appreciate’ denote psychological states and can function as verbs in sentences (see (52) and (53)).

- (52) Zhangsan hen xinshang Lisi.  
 Zhangsan very admire Lisi  
 ‘Zhangsan admires Lisi.’

- (53) Zhangsan hen ganji Lisi.  
 Zhangsan very appreciate Lisi  
 ‘Zhangsan is grateful towards Lisi.’

The two verbs can form derived nominals, but these nominals do not contain obligatory arguments. In other words, the two verbs denoting psychological states do not form AS-nominals. The examples in (54) and (55) show that the internal argument *Lisi* is omissible in both nominals. The optionality of the internal arguments signals the absence of argument structure (Grimshaw 1990).

- (54) **Zhangsan (dui Lisi) de xinshang** shi zhenxin de.  
 Zhangsan DUI Lisi DE admiration be sincere DE  
 ‘Zhangsan’s admiration of Lisi is sincere.’
- (55) **Zhangsan (dui Lisi) de ganji** shi zhenxin de.  
 Zhangsan DUI Lisi DE gratitude be sincere DE  
 ‘Zhangsan’s gratitude towards Lisi is sincere.’

In sum, our observation suggests that Mandarin does have AS-nominals. Yet there is a difference between Mandarin and English. In English, derived nominals may be derived from either telic (e.g., *refuse* and *refusal*) or atelic verbs (e.g., *investigate* and *investigation*). In Mandarin, only telic verbs have AS-nominal counterparts, which typically only allow one argument. As to why there is such a distinction between the two languages, we will discuss it in Chapter 4. In Chapter 3, we focus on evaluating previous studies on Mandarin derived nominals. Previous studies treat all event-denoting derived nominals as AS-nominals, for they do not

notice the relation between telicity and obligatoriness of arguments in Mandarin derived nominals (as described in (51)). In other words, they do not distinguish between simple event nominals and AS-nominals. This is a major weakness in previous studies (see Section 3.2 for more details).

Now that we have confirmed that Mandarin has AS-nominals, we move on to review previous analyses on the structure of such nominals.

### 3.2 Mandarin AS-nominals cast in the lexicalist approach

There are analyses of Mandarin AS-nominals (e.g., G. Shi 1981, 1988, Lin 1997) that are in accordance with the lexicalist approach introduced in Chapter 2. The lexicalist approach to Mandarin AS-nominals argues that the semantic head of an AS-nominal is formed in the lexicon and enters syntax as a noun. The arguments in the AS-nominal are modifiers and have the same syntactic status as other modifiers like adjectives.

The lexicalist approach acknowledges the nominal nature of the derived nominal and the nominal nature of the semantic head of the derived nominal, which is in accordance with our observation in Section 3.1. An obvious advantage of the lexicalist approach is that it simplifies the syntactic process, as there is no need to postulate verbal projections within nominal structures. Also, the lexicalist approach provides a straightforward explanation for the derived noun's lack of verbal properties as observed in Section 3.1.2. Since the semantic heads of derived nominals enter syntax like ordinary nouns (such as *shu* 'book'), they naturally lack verbal properties.<sup>44</sup>

---

<sup>44</sup> Ordinary noun phrases may also be headed by abstract nouns like *xiwang* 'hope'.  
(i) chenggong de xiwang  
    success     DE hope  
    'The hope of success'

However, the lexicalist account cannot explain our generalization stated in (51). Firstly, it cannot explain why some derived nominals have obligatory arguments. If the elements preceding Mandarin *de* in AS-nominals are just modifiers, they should be optional. But this does not comply with our observation in Section 3.1. Secondly, the lexicalist approach treats verbs denoting telic and atelic events on a par and thus wrongly predicts that the source lexical items (i.e., Roots in the sense of the DM approach) that denote telic and atelic events in Mandarin can both form AS-nominals. This prediction runs counter to our observation that only Roots denoting telic events can form AS-nominals in Mandarin. Thirdly, our observation that Mandarin AS-nominals allow one argument but not two arguments (when the verb concerned is transitive) cannot be explained by the lexicalist account. The crucial data from (50) are repeated in (56). The brackets mark the elements that are considered to be modifiers in the lexicalist account.

(56) a. Tamen chuban-le zhe ben shu.

they publish-ASP this CL book

‘They have published the book.’

b. [zhe ben shu] de chuban

this CL book DE publish

‘the book’s publication’

c. \*[tamen] [dui zhe ben shu] de chuban

they DUI this CL book DE publication

---

For simplicity, we use noun phrases headed by concrete nouns (e.g., *shu* ‘book’ in (58)) as a representative for all ordinary noun phrases.

The (a) example in (56) show that the verb *chuban* ‘publish’ can have two arguments. If *zhe ben shu* ‘this book’ in the (b) example is just a modifier, the (c) example should also be grammatical, for nouns allow more than one modifier, just like in (57).<sup>45</sup>

- (57) [Zhangsan] [zui hao] de shu  
 Zhangsan most good DE book  
 ‘Zhangsan’s best book’

Besides the failure to account for our generalization, the lexicalist approach cannot explain the crucial differences between AS-nominals and ordinary noun phrases. There are syntactic differences between Mandarin AS-nominals and noun phrases headed by concrete nouns (see also Fu 1994). Firstly, ordinary noun phrases can be further modified. For example, adjectives may modify noun phrases like *Luxun de shu* ‘the book by Luxun’ (see (58)). But AS-nominals can never be further modified (i.e., adding another modifier in front of the whole AS-nominal). For instance, the derived nominal *gongsì de chénglì* ‘the establishment of the company’ cannot be modified by *shùnli de* ‘smooth’ (see (59)).<sup>46</sup>

---

<sup>45</sup> Prof. Yang Gu suggests that the problem of (56c) is due to the compatibility of the verbal head and the preposition; that is, Mandarin *duì* does not go together with *chuban*, either when *chuban* ‘publish’ is a verb in (i) or when *chuban* ‘publication’ is a noun in (56c).

(i) \*Tamen duì zhe ben shu chuban-le.  
 they DUI this CL book publish-ASP

Similar observation has been made by Fu (1994), who suggests that *duì* is only compatible with atelic events/states.

Yet the contrast between (56b) and (56c) and the contrast between (57) and (56c) still reveal that Mandarin AS-nominals forbid external arguments to appear. If Mandarin AS-nominals allowed external arguments to appear, another preposition would have been developed to replace *duì* to introduce the internal arguments of AS-nominals.

<sup>46</sup> Not all modifiers can appear before a possessor (see (i)).

(i) \*hóngsè de wǒ de qúnzi  
 red DE I DE dress

The contrast we make use of is that further modification is possible for ordinary noun phrases but impossible for derived nominals.

(58) houhou de **Luxun de shu**

thick DE Luxun DE book

‘the thick book by Luxun’ or ‘the thick book belonging to Luxun’

(59) \*shunli de **gongsi de chengli**

smooth DE company DE establishment

Secondly, the position of classifiers is different in AS-nominals and in ordinary noun phrases. In ordinary Mandarin noun phrases, classifiers may precede modifiers and the head noun, as shown in (60); in AS-nominals, classifiers cannot precede the string composed of the argument and the head noun, as shown in (61). If AS-nominals had the same syntactic structure as ordinary noun phrases, the example in (61) would be grammatical.<sup>47</sup>

(60) liang ben [Zhangsan de shu]

two CL Zhangsan DE book

---

<sup>47</sup> Prof. Thomas Lee points out that the use of certain types of modifiers after a classifier may be a general prohibition, rather than specific to Mandarin AS-nominals. For example, a possessive modifier following the classifier is generally not good, as in the following:

(i) \*liang ge [wo de erzi]

two CL I DE son

Intended: ‘my two sons’

We approach this kind of data in a different way. We consider that our analysis for Mandarin AS-nominals can apply to kinship nouns such as *erzi* ‘son’ in (i); that is, *wo de erzi* ‘my son’ has an underlying verbal structure of [son BELONG TO me]. The reason for this analysis is that kinship nouns and the head nouns in Mandarin AS-nominals share similarities. For instance, syntactically, kinship nouns cannot be bare (see (ii) and (iii)), similar to Mandarin AS-nouns (see Section 3.1.3). In addition, semantically, the possessive modifier is an argument of the kinship noun.

(ii) \*erzi zou-le jinlai.

son walk-ASP inside

(iii) wo de erzi zou-le jinlai.

I DE son walk-ASP inside

‘my son walked in.’

Kinship nouns and AS-nominals in Mandarin may share similar derivations and structures; thus they both do not forbid classifiers appearing in a position like in (i). Since the structure of kinship nouns is outside of the scope of this thesis, we do not go into the details.

‘two books of/by Zhangsan’

(61) \*liang ci [ta de likai]

two CL he DE departure

In conclusion, AS-nominals and ordinary noun phrases have crucial differences: AS-nominals have obligatory arguments; they do not permit further modification; they cannot be preceded by classifiers. These differences refute the lexicalist approach, which argues that AS-nominals and ordinary noun phrases have the same syntactic properties. The lexicalist approach to Mandarin AS-nominals cannot be maintained. Next, we review the syntactic approach to Mandarin AS-nominals.

### 3.3 Mandarin AS-nominals cast in the syntactic approach

The syntactic approach considers that the semantic head of an AS-nominal is a syntactically nominalized verb (e.g., Fu 1994, Simpson 2002). In other words, a verb merges with a nominalizing head, producing a derived noun. Two representative works along the lines of the syntactic approach, namely Fu (1994) and Simpson (2002), are reviewed in detail in the following sections. Fu’s (1994) dissertation is the most extensive study of Mandarin derived nominals. Simpson’s (2002) proposal is a refinement of Fu’s (1994) analysis.

#### 3.3.1 Fu (1994)

The theoretical aim of Fu’s (1994) study is to support Borer’s (1991, 1993) Parallel Morphology. The Parallel Morphology proposes that morphology may access both the lexicon and syntax and impose similar rules on them. Fu argues that Mandarin

derived nouns may be formed both in the lexicon and in syntax through similar morphological process, which is zero-derivation (Marchant 1964).

Based on Grimshaw's (1990) classification of the three types of nominals (see Section 2.2.3), Fu (1994) observes that Mandarin also has the three types of nominals: AS-nominal (see (62)), simple event nominal (see (63)), and result nominal (see (64)).

(62) **Ta ??(dui zaiqing) de baodao** jinxing-le san ge xiaoshi.

he DUI disaster DE report go.on-ASP three CL hour

'His reporting of the disaster went on for three hours.'

(Fu 1994: 71 (46))

(63) **Huiyi** jinxing-le san ge xiaoshi.

meeting go.on-ASP three CL hour

'The meeting went on for three hours.'

(64) **Zhe pian baodao** yigong wu ye.

this CL report total five page

'This report has five pages in total.'

According to Fu (1994), *baodao* in (62) is an AS-noun because it has an obligatory internal argument *zaiqing* 'disaster'.<sup>48</sup> *Huiyi* 'meeting' in (63) is a simple event noun for it denotes an event but does not take arguments. *Baodao* 'report' in (64) is a result noun because it refers to an entity, which is a five-page written piece of work. Fu (1994) considers that the result noun *baodao* 'report' is

---

<sup>48</sup> We disagree with Fu (1994) on this crucial piece of data (see (29) to (31) in Section 3.1.3). According to our study, the *dui* phrase can be omitted, indicating that *baodao* 'report' in (62) do not obligatorily take arguments and thus is not a noun with argument structure. We consider that the derived nominal in (62) is a simple event nominal but not an AS-nominal.



formed in the lexicon through zero-derivation, while the AS-noun *baodao* ‘report’ in (62) is formed in syntax through zero-derivation (structural illustration will be provided shortly). In other words, the result noun and the AS-noun are formed through the similar process of zero-derivation. They differ in where the derivation takes place and this difference has consequences. If the verb is nominalized in syntax, its argument structure (which Fu considers to be realized in the VP projection) is preserved in the resultant noun phrase. If the verb is nominalized in the lexicon, where its argument structure has not been realized, it becomes a result noun.

Fu (1994) employs specific diagnostics to prove that Mandarin has AS-nominals.<sup>49</sup> First of all, Mandarin AS-nominals are argument-taking. In (65), the verb *jinxing* ‘proceed’ indicates that *baodao* in (a) denotes an event; the verb *fabiao* ‘publish’ indicates that *baodao* is an article and thus a result noun in (b); *wenzhang* ‘article’ in (c) is an ordinary entity-denoting noun without any corresponding verb.

(65) a. Ta ??(dui zaiqing) de baodao jinxing-le san-ge xiaoshi.

he DUI disaster DE report proceed-ASP three CL hour

‘His reporting of the disaster lasted three hours.’

b. Ta (guanyu zaiqing) de baodao fabiao-le.

he about disaster DE report publish-ASP

---

<sup>49</sup> Fu (1994) named Mandarin AS-nominals as “process-denoting derived nominals,” meaning derived nominals that denote processes. To be consistent with my previous discussions, I do not use this new term. Moreover, Mandarin AS-nominals are not all process-denoting. For instance, (i) refers to an achievement rather than a process.

(i) gongsi de chengli  
company DE establishment  
‘the establishment of the company’

‘His report (on the disaster) was published.’

c. Ta (guanyu zaiqing) de wenzhang fabiao-le.

he about disaster DE article publish-ASP

‘His article (on the disaster) was published.’

(Adapted from Fu 1994:71(46))

The question marks in the (a) sentence of (65) indicate Fu’s (1994) intuition that the argument *zaiqing* ‘disaster’ should not be omitted. *Ta dui zaiqing de baodao* ‘his report of the disaster’ is a derived nominal with an obligatory internal argument *zaiqing* ‘disaster’. Result noun *baodao* ‘a report’ and non-derived noun *wenzhang* ‘article’ take no obligatory arguments and thus have no argument structures. This is Fu’s (1994) observation about the argument-taking property of Mandarin AS-nominals.<sup>50</sup>

Secondly, Mandarin AS-nominals allow subject oriented adjectives. Fu (1994) considers *buhuaihaoyi* ‘malevolent’ as a subject oriented adjective. In (66) (b) and (c), the result noun *baodao* is not compatible with this adjective, but the adjective is acceptable with the AS-nominal in (66) (a).

(66) a.[Ta buhuaihaoyi de ??(dui zaiqing) de baodao]jinxing-le san ge xiaoshi.

he malevolent DE DUI disaster DE report proceed-ASP three CL hour

‘His malevolent reporting of the disaster lasted three hours.’

b.?? Ta buhuaihaoyi de (guanyu zaiqing de) baodao fabiao-le.

he malevolent DE about disaster DE report publish-ASP

‘His malevolent report (about the disaster) was published.’

---

<sup>50</sup> It is to be demonstrated in Chapter 4 that omitting *dui zaiqing* in the (a) sentences of (65) and (66) is possible.

c.?? Ta buhuaihaoyi de (guanyu zaiqing de) wenzhang fabiao-le.

he malevolent DE about disaster DE article publish-ASP

‘His malevolent article (about the disaster) was published.’

(Adapted from Fu 1994:71(47))

However, we notice that *buhuaihaoyi* ‘malevolent’ does not modify AS-nominals exclusively. For instance, in *buhuaihaoyi de hua* ‘malevolent words’, *hua* ‘words’ is not event-denoting nor is it derived from verbs. Also, sentences (b) and (c) in (66) can be improved by switching the position of *buhuaihaoyi* and *guanyu zaiqing* (see (67) below); that is to say, *buhuaihaoyi* ‘malevolent’ can modify non-AS-nominals, contrary to Fu’s observation. The new sentences are still slightly degraded, probably because Mandarin does not favor multiple modifiers for nouns.

(67) a. (?) Ta guanyu zaiqing de buhuaihaoyi de baodao fabiao-le.

he about disaster DE malevolent DE report publish-ASP

‘His malevolent report (about the disaster) was published.’

b. (?) Ta guanyu zaiqing de buhuaihaoyi de wenzhang fabiao-le.

he about disaster DE malevolent DE article publis-ASP

‘His malevolent article (about the disaster) was published.’

Thirdly, Fu (1994) argues that AS-nominals can be modified by frequency adjectives (*jingchangbuduan* ‘frequently’ in (68)) and temporal expressions (*sange xiaoshi* ‘three hours’ in (69)). In contrast, simple event nominals and entity-denoting nominals do not have these properties, as shown in the (b) and (c) examples, respectively.

- (68) a. Ta jingchangbuduan-de ??(dui zaiqing) de baodao shifen youyong.  
 he frequent-DE                      DUI disaster DE report very useful  
 ‘His frequent reporting of the disaster is very useful.’
- b. \*Ta jingchangbuduan-de (guanyu zaiqing) de baodao fabiao-le.  
 he frequent-DE                      about disaster DE report publish-ASP
- c. \*Ta jingchangbuduan-de (guanyu zaiqing) de wenzhang fabiao-le.  
 he frequent                      DE                      about disaster                      DE article                      publish-ASP
- (Adapted from Fu 1994:72(48))

- (69) a. Ta ??(dui zaiqing de) sange xiaoshi de baodao shifen youyong.  
 he                      DUI disaster DE three hour DE reporting very useful  
 ‘His reporting of the disaster for three hours is very useful.’
- b. \*Ta (guanyu zaiqing de) san-ge xiaoshi de baodao fabiao-le.  
 he about disaster DE three hour DE report publish-ASP
- c. \*Ta (guanyu zaiqing de) san-ge xiaoshi de wenzhang fabiao-le.  
 he about disaster DE three hour DE article                      publish-ASP
- (Adapted from Fu 1994:72 (49a))

However, the data are questionable. The (a) sentences in (68) and (69) are not natural, with or without the internal argument *dui zaiqing* ‘of the disaster’. In (69) (a), the sentence is indeed degraded without *dui zaiqing*, but for a reason unrelated to argument structure. If *na* ‘that’ is added, the sentence improves immediately.

- (70) Ta na san-ge xiaoshi de baodao shifen youyong.  
 he that three hour DE reporting very useful

‘His three hours’ reporting is very useful.’

Similar improvements are observed in ordinary entity-denoting nouns. In (71) below, *bi* ‘pen’ is entity-denoting. Without *na* ‘that’, *\*ta san zhi bi* ‘his three pens’ is unacceptable, just like *\*ta sange xiaoshi de baodao* ‘his three hours’ report’. Therefore, the ungrammaticality of (69)(a) without *dui zaiqing* is not due to any requirement on argument structure.

(71) a. \*Ta san zhi bi shifen youyong.

he three CL pen very useful

b. Ta na san zhi bi shifen youyong.

he that three CL pen very useful

‘Those three pens of his are very useful.’

In sum, except for the argument-taking ability, Fu’s (1994) diagnostics do not distinguish Mandarin AS-nominals from other types of nominals; especially, most of the diagnostics do not distinguish Mandarin AS-nominals from simple event nominals (which denote events but do not have argument structure, Grimshaw 1990; see Section 2.2.3).

Overall, Fu’s (1994) study suggests that Mandarin has all the three types of nominals similar to the ones in English as proposed by Grimshaw (1990), which are AS-nominals, simple event nominals, and result nominals. Fu (1994) deviates from Grimshaw’s (1990) lexicalist account in proposing an underlying verbal projection to account for the argument structure of AS-nominals. We have pointed out that, concerning the status of Mandarin *de*, Fu’s analysis on AS-nominals needs

refinement. In this regard, Simpson (2002) proposes a possible solution, which is discussed in the next subsection.

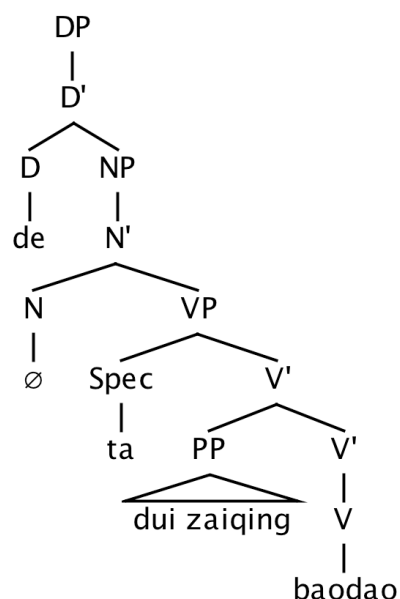
### 3.3.2 Simpson (2002)

Simpson (2002) analyzes Mandarin attributive marker *de* as D(eterminer) (to be elaborated in Section 3.3.3) and modifies Fu's (1990) analysis of Mandarin derived nominals accordingly.

The tree diagram illustrates Simpson's analysis of the derived nominal in (72). As shown in (73), Mandarin *de* takes an NP as its complement. The N is a nominalizing head. A VP containing the verb and its arguments forms the complement to N. Such a structural relation between N and V provides an environment where the verb can be nominalized; similar structures have been proposed in accounting for English derived nominals (see Section 2.3.2).

- (72) Ta dui zaiqing de baodao  
he DUI disaster DE report  
'his reporting of the disaster'

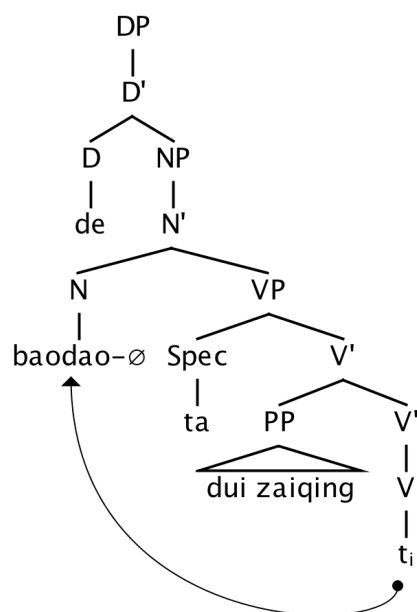
(73)



The presence of both N and V projections accounts for the mixed properties of AS-nominals. The VP projection realizes the argument structure of the verb, which is the major verbal property of AS-nominals. Due to the nominal projections (NP and DP) imposed on the VP, the phrase in (73) will function as a noun phrase.

Next, the verb undergoes leftward movement to N, as shown in (74), so as to provide phonological support to the null nominalizer.

(74)



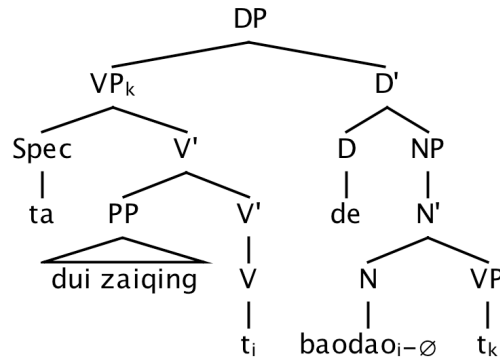
(Based on Simpson 2002: 97 (70))

From (73) and (74), we can see that Simpson's (2002) analysis maintains most of Fu's (1994) analysis, including an underlying VP, a nominalizing functional head, and the N-to-V movement.

The major difference between Simpson (2002) and Fu (1994) concerns the analysis of Mandarin *de*. Simpson considers Mandarin *de* to be an enclitic, which attracts a phrasal element to its specifier position for phonological support. As a consequence, the remaining VP rises to Spec, DP (as in (75)) to support the enclitic *de*.



(75)



(Based on Simpson 2002: 97 (71))

There are three merits in Simpson's (2002) account. First, unlike Fu (1994), there is no violation of the Head Movement Constraint in Simpson's (2002) analysis. As the N properly governs V, the verb can legitimately move to N. Second, the complement of *de* is a phrase (NP) and not a head, which is in accordance with our observation in the subsection above. Third, Simpson (2002) provides a consistent head-initial analysis for Mandarin noun phrases. In Fu's (1994) proposal, the VP is head-initial but the NP is head-final.

However, there is a problem with modifiers. In the structure proposed by Simpson (2002), the VP can have modifiers. An example is given in (76) to derive sentence (77).

- (76) a. [DP de [NP [VP Zhangsan dui Lisi **yanli** piping]]]  
 b. [DP de [NP [N piping<sub>i</sub> [VP Zhangsan dui Lisi yanli t<sub>i</sub>]]]  
 c. [DP [VP Zhangsan dui Lisi yanli t<sub>i</sub>]<sub>k</sub> de [NP [N piping<sub>i</sub> t<sub>k</sub>]]]

(Adapted from Simpson 2002:97 (72-74))

- (77) Zhangsan dui Lisi yanli de piping  
 Z.            to    L. severe DE criticism  
 ‘Zhangsan’s severe criticism of Lisi’

But at least for some speakers, (77) is not grammatical.<sup>51</sup> In our analysis to be presented in Chapter 4, the underlying VP is a minimal verbal projection that does not accommodate modifiers. The problem with verbal modifiers like *yanli* ‘severe’ in (77) does not arise.

In conclusion, although the syntactic approach to Mandarin AS-nominals is more preferable than the lexicalist approach, the syntactic analysis of Mandarin AS-nominals still awaits refinement, especially concerning our new observation discussed in Section 3.1. Before presenting our analysis, we would like to justify the analysis of Mandarin *de* as D.

### 3.3.3 Mandarin *de* as a determiner

Mandarin has more than one instance of *de*. Zhu (1961, 1966, 1980, 1983) distinguishes three types of *de*. *De*<sub>1</sub> is an adverbial marker (see (78)); *de*<sub>2</sub> is an adjectival marker (see (79)); *de*<sub>3</sub> is a nominal marker (see (80)). The Mandarin *de* involved in derived nominals belongs to *de*<sub>3</sub>. In our discussion, we use “Mandarin *de*” to exclusively refer to *de*<sub>3</sub>.

- (78) manman-**de**            pao  
       slowly-DE            run  
       ‘run slowly’

---

<sup>51</sup> Yang Gu, personal communication.

(79) Pingguo honghong-**de**.

apple red-DE

‘The apple is red.’

(80) zise-**de** putao

purple-DE grape

‘purple grapes’

Simpson (2001, 2002) and Simpson and Wu (2002) argue that Mandarin *de* is a determiner. They argue that determiners do not necessarily mark definiteness (cf. Lyons 1999) and Mandarin *de* is a determiner that does not contribute to the definite interpretation of the noun phrase. The evidence comes from cross-linguistic data. For example, the Albanian determiner *i* in (81) does not trigger definite interpretation and the phrase is indefinite.

(81) nje djale i mire

a boy the good

‘a good boy’ (Giusti 1997)

Another example is the German determiner *der* in (82), which does not contribute to the definite interpretation of the phrase. Instead, it is the proper name *Karl* that results in the definite interpretation (Simpson 2002).

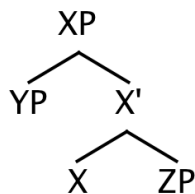
(82) der Karl

the Karl (Simpson 2002:80(20))

We can see that, for Simpson (2002), definiteness is more due to semantic interpretation than syntactic projection, for the presence of D does not guarantee definite interpretation and that elements other than D can result in definite interpretation. Although Mandarin *de* does not encode definiteness, it can still be D.

The discussion by far only suggests that Mandarin *de* may be D. That it must be D is due to the theoretical framework adopted by Simpson (2002), which is Kayne's (1994) Antisymmetry of Syntax theory. Kayne's Linear Correspondence Axiom (LCA) provides a rule of mapping from hierarchical syntactic structure to linear phonological representation. In essence, the LCA states that linear word order must reflect the specifier-head-complement order of syntactic structure.<sup>52</sup> A syntactic structure like (83) is linearized as YP-X-ZP.

(83)



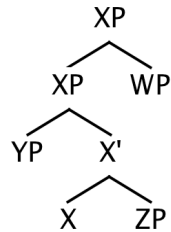
Kayne's (1994) theory on word order has wide implications on syntactic analysis, including a reanalysis of rightward adjunctions. In previous analyses, a

---

<sup>52</sup> Linearization in Kayne (1994) complies with "asymmetric c-command," which is defined as "X asymmetrically c-commands Y iff X c-commands Y and Y does not c-command X" (Kayne 1994:4(2)). If X asymmetrically c-commands Y, X precedes Y in linear order (Kayne 1994). In (83), the YP in the specifier position asymmetrically c-commands the head X and the complement ZP and thus YP precedes X and ZP in linear order; the head X asymmetrically c-commands all the nodes dominated by ZP and thus X precedes the nodes dominated by ZP, which is equivalent to ZP.

structure like (84), where WP is right-adjoined to XP, is assumed to produce the string of YP-X-ZP-WP.

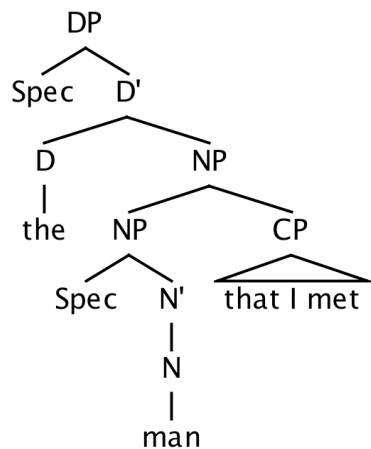
(84)



In Kayne's (1994) theory, the structure in (84) cannot be linearized into YP-X-ZP-WP, where WP follows X. This is because WP asymmetrically c-commands X and thus must precede X in linear order.

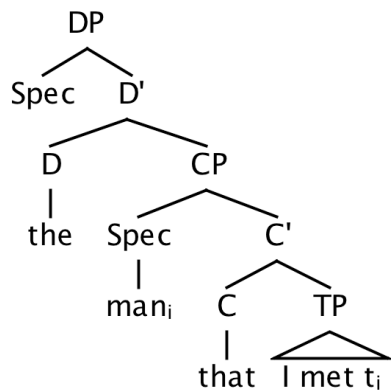
A typical example of right-adjunction is relative clauses. Relative clauses have been analyzed as having a CP right-adjoined to a noun phrase, as shown in (85) (Chomsky 1977). According to the LCA, the output after linearization is *\*the that I met man*, not the expected *the man that I met*.

(85)



Kayne (1994) proposes the relative clause structure in (86), with the head noun *man* moved up from within the clause to Spec, CP.<sup>53</sup> As *man* asymmetrically c-commands the head C and the complement of C (which is the TP), *man* precedes *that I met* in linear order.

(86)



Kayne posits that for languages where the relative clause precedes the head noun, further movements take place. For example, in Amharic, relative clauses precede the determiner (Gragg 1972). According to Kayne (1994), Amharic relative constructions have the following structure (English words are used for ease of exposition), where the TP undergoes remnant movement to Spec, DP.

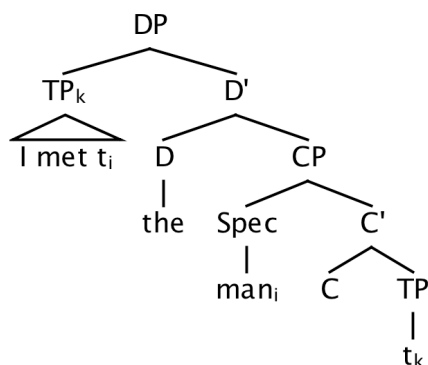
<sup>53</sup> The evidence for such a structure of CP within DP comes from the contrast between the following two examples.

(i) \*?I found the two pictures of John's/his. (Kayne 1994:86 (5))

(ii) I found the (two) pictures of John's/his that you lent me. (Kayne 1994: 86 (6))

According to Kayne (1994), the presence of *that you lent me* in (ii) must have added a structure that is absent in the ungrammatical (i). A natural candidate is the CP structure introduced by the clause *that you lent me*.

(87)



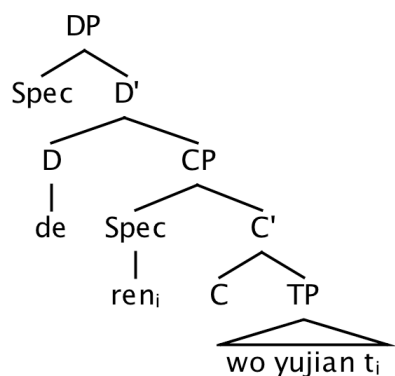
Mandarin relative clauses also precede the head noun in noun phrases (see (88)). By comparison with the structure in (87), we naturally come to the hypothesis made by Simpson (2002) that Mandarin *de* is D.<sup>54</sup>

- (88) Wo            yujian de        ren  
       I            meet    DE     person  
       ‘the person I met’

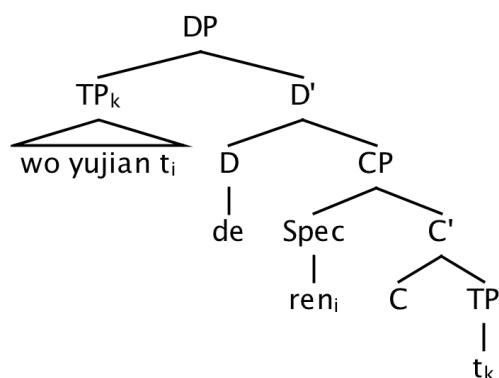
The derivation of Mandarin relative construction in (88) is shown in the two tree diagrams below (Simpson 2002, Simpson and Wu 2002). The head noun *ren* ‘person’ moves to Spec, CP (see (89)) and then remnant movement takes place (see (90)).

<sup>54</sup> Prof. Yang Gu (personal communication) raised the question as to why in the Mandarin relative clause structure in (89), ‘man’ cannot move to Spec, DP to support Mandarin *de*. Simpson’s (2002) answer is that Mandarin *de* attracts TP structures to its specifier. This may sound stipulative and ad hoc. But since our focus is on Mandarin *de* being D and that independent evidence is found (see the discussion below), we keep Simpson’s (2002) analysis. We assume that there are language specific reasons that Mandarin *de* attracts the TP to undergo remnant movement.

(89)



(90)



By arguing that Mandarin *de* is D, Simpson (2002) is able to provide a better account for Mandarin derived nominals than Fu (1994), which has already been discussed in Section 3.3.2.

An additional support for Mandarin *de* being D comes from the study on Cantonese, a dialect of Yue Chinese that have numerous similarities with Mandarin Chinese (Cheung 1972, Matthews and Yip 1994/2011). Yang (to appear) argues that Cantonese *ge* is D; since Mandarin *de* and Cantonese *ge* are comparable in their syntactic status as nominal markers (Zhu 1980), Mandarin *de* should also be



D. One piece of evidence for Cantonese *ge* being D applies to Mandarin *de*. Li (1998) uses “Number Phrase” to refer to the [Num + Cl + N] sequence that denotes a quantity rather than an entity (see also Li and Lu 2002).<sup>55</sup> Based on Li, in (91), the [Num + Cl + N] sequences *wu ge xiaohai* ‘five children’ and *shi wan fan* ‘ten bowls of rice’ refer to the quantity of five children and the quantity of ten bowls of rice. They are not referential; instead, they are quantity-denoting expressions. What is expressed in (91) is that the quantity of five children mismatches the quantity of ten bowls. Number Phrases contrast with indefinite referential noun phrases like *wu ge xiaohai* ‘five children’ in (92), which refers to individual children.

- (91) Wu ge xiaohai chibuwan shi wan fan.  
       five CL child eat.not.finish ten bowl rice  
       ‘Five children cannot finish ten bowls of rice.’ (Li 1998:695(9))
- (92) You wu ge xiaohai likai-le.  
       Have five CL child leave-ASP  
       ‘Five children have left.’

Li (1998) proposes that quantity-denoting expressions do not have DP projections. As shown in (93), Number Phrases lack the DP layer, while the referential [Num + Cl + N] sequences have the DP projection (see (94)).

- (93) [wu ge xiaohai] (quantity-denoting Number Phrase)  
       five CL child

---

<sup>55</sup> In this paper, Number Phrases are differentiated from Numeral Phrases. “Number Phrase” is a descriptive term referring to a noun phrase composed of a numeral, a classifier, and a noun. A Numeral Phrase is a projection head by a numeral. “NumP” is short for “Numeral Phrase.”

(94) [<sub>DP</sub> Ø<sub>D</sub> [wu ge xiaohai]] (referential noun phrase)

five CL child

Only some sentences allow the quantity interpretation.<sup>56</sup> Li and Lu (2002) observe that changes on these sentences may lead to ungrammaticality. For instance, if *dai jiu-fen kouliang* ‘carry nine rations’ in (95) (quoted from Tsai 2001) is changed into *huijia* ‘go home’, the sentence becomes ungrammatical (see (96)).

(95) San ge bubing keyi dai jiu fen kouliang.

three CL foot.soldier may carry nine CL ration

‘Three foot soldiers may carry nine rations.’

(96) \*San ge bubin keyi huijia.

three CL foot.soldier can go.home

The context provided by the sentence in (96) does not allow for the quantity interpretation: the quantity of three foot soldiers does not match any other quantity. The lack of matching quantities forces *san ge bubin* to be interpreted as a referential noun phrase. But indefinite noun phrases are generally banned in subject positions in Mandarin (Chao 1968, Li and Thompson 1981, among others). This is because the null D of the noun phrase in subject positions is not lexically governed (Aoun et al. 1987, Longobardi 1994, and Li 1998).

We discover that adding a modifier to the [Num + Cl + N] sequence in (96) saves the sentence:<sup>57</sup>

<sup>56</sup> For more detailed discussion on quantity interpretations, see Tsai (1996, 2001).

<sup>57</sup> Yang (to appear) deals with Mandarin *de* and Cantonese *ge* appearing before the classifier. Her proposal does not apply to *de* and *ge* following the classifier. For example, in contrast to (97), adding a modifier after the classifier does not make the sentence in (96) grammatical:

- (97) Xin ruwu de san ge bubin keyi huijia.  
 new enlist DE three CL foot.soldier can go.home  
 ‘The three newly enlisted soldiers can go home.’

This indicates that the modifier makes the requirement on the null D fulfilled. A simple explanation is that *de* is D. In (97), the referential [Num + Cl + N] can appear in the subject position because the D position is filled by *de* and no longer requires proper government. In addition, the meaning of the phrase is in accordance with a DP structure. The subject in (97) is referential rather than quantity-denoting.

Although we consider the functional head of AS-nominals to be *de*, which is analyzed as D, we do not assume that Mandarin *de* is such a D in all cases. Mandarin *de* may appear either before or after the classifier. The modifier *wo yujian de* in (98) and (99) are called “outer modifier” and “inner modifier” according to their relative position with the classifier (e.g., Zhang 2006).

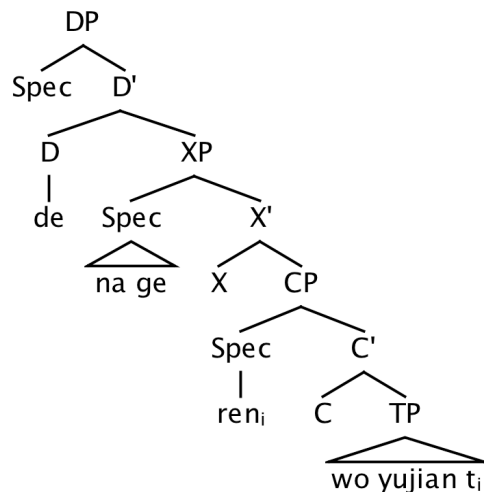
- (98) wo yujian de na ge ren  
 I meet DE that CL person  
 ‘that person I met’
- (99) na ge wo yujian de ren  
 that CL I meet DE person  
 ‘that person I met’

---

(i) \*san ge qiangzhuang de bubin keyi huijia.  
 three CL strong DE foot.soldier can go.home

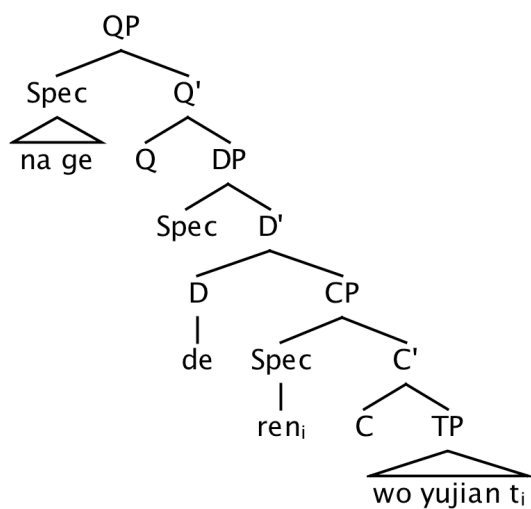
According to Simpson (2001, 2002), in (98) the [demonstrative + classifier] sequence is part of an (unspecified) XP projected below the DP and above the CP, as shown below (cf. the tree diagram in (89)).<sup>58</sup>

(100)



In (99), the [demonstrative + classifier] sequence is part of a QP projected above DP (Simpson 2002).

(101)



<sup>58</sup> It has been argued that demonstratives can be generated in a functional projection below DP (see for instance, Bernstein 1993, 1997, Brugè 1996, Cheung 2007, Giusti 1997).

In other words, the syntactic status of the [demonstrative + classifier] sequence varies based on its relative position with Mandarin *de*. But then, what happens when there are both *de*'s preceding and following the [demonstrative + classifier] sequence as illustrated in (102)? It is difficult to determine the syntactic status of the [demonstrative + classifier] sequence in (102) if we completely follow Simpson's (2001, 2002) analysis.

- (102) wo yujian de na ge hen gao de ren  
 I meet DE that CL very tall DE person  
 'the person I met who was very tall'

We only consider that the Mandarin *de* in outer modifiers (i.e., the *de* before classifiers) is D. It is also clearly stated in the previous discussion on modification and Number Phrases that the proposal for Mandarin *de* and Cantonese *ge* being D applies to outer modifier cases only (Yang, to appear; see also footnote 57). The multiple functionality of Mandarin *de* in noun phrases is widely discussed (e.g., Cheung and Li 2012, Li 2011, Tsai 2011). We accept that Mandarin *de* has more than one syntactic function. As this topic involves details beyond the scope of the present thesis, we do not go further. We can only conservatively conclude that the Mandarin *de* preceding classifiers is D.

### 3.4 Conclusion

In this chapter, we discuss the syntactic structure of Mandarin AS-nominals. We conclude that the semantic head of Mandarin AS-nominals is a noun that is generated by nominalizing a verb. Concerning the argument structure of Mandarin

derived nominals, we make the following generalization: in Mandarin, derived nouns denoting atelic events do not obligatorily take arguments; derived nouns denoting telic events have one and only one argument in their derived nominals. In other words, the Mandarin AS-nominal allows only one argument to appear in its phrase. Based on this observation, we reviewed the major analyses to Mandarin AS-nominals. Overall, none of them is aware of our observation and cannot account for it. In addition, the lexicalist account (e.g., G. Shi 1981, 1988, Lin 1997) cannot explain the differences between AS-nominals and ordinary noun phrases (which the lexicalist approach considers to be similar in syntactic structure), including the possibility of further modification and the position of the classifier. The syntactic approach (Fu 1994, Simpson 2002) considers that there are underlying verbal projections in AS-nominals and that the semantic heads of AS-nominals are nominalized verbs. The underlying verbal structure can account for the argument structure of AS-nominals. The syntactic approach is more advantageous than the lexicalist approach. Yet there are still inadequacies with previous syntactic analyses. They are to be modified in our proposal stated in Chapter 4.

## Chapter 4 The structure of Mandarin derived nominals

As stated in Chapter 1, our study aims at accounting for the word category variation and the argument structure of Mandarin derived nominals. In Chapter 3, we have discussed previous studies on Mandarin derived nominals. The syntactic approach (Fu 1994, Simpson 2002) offers important insights but there are problems with the structure of the underlying verbal projection. More importantly, we observe that, in Mandarin, only derived nouns denoting telic events obligatorily take arguments and that only one argument can appear in AS-nominals (see Section 3.1.3). This observation calls into question the syntactic structure of AS-nominals proposed by Fu (1994) and Simpson (2002), which considers a structure of verbs projecting two argument positions as part of the syntactic structure of AS-nominals. Such a structure would generate an AS-nominal with two arguments, which, according to our observation, does not exist in Mandarin.

In this chapter, we present our proposal on the structure and derivation of Mandarin AS-nominals, as well as the derivation of simple event nominals and result nominals in Mandarin. As discussed in Chapter 2, the DM approach provides the most satisfactory explanation for derived nominals in English. So we make an attempt to modify the syntactic analyses of Fu (1994) and Simpson (2002) by adopting the DM approach. Following Fu (1994) and in accordance with the analysis of English derived nominals discussed in Chapter 2, we consider that Mandarin AS-nominals have underlying verbal projections whereas the other two types of nominals do not. The details of the structure we propose for Mandarin AS-nominals is based on the analyses of Fu (1994) and Simpson (2002) and it borrows insights from researches on other languages (e.g., Alexiadou 2001).

#### 4.1 Mandarin derived nominals in the DM framework

In Section 3.1.3, we made a generalization concerning the argument structure of Mandarin derived nominals. It is repeated below:

- (1) In Mandarin, derived nouns denoting atelic events do not obligatorily take arguments; derived nouns denoting telic events have one and only one argument in their derived nominals; external arguments do not appear in Mandarin derived nominals denoting telic events.

In other words, our generalization states that Mandarin AS-nominals are all derived from Roots denoting telic events and that they only take one argument. In this section, we propose an analysis that can account for the above generalization.

##### 4.1.1 Mandarin classifiers

Before discussing the syntax of Mandarin derived nominals, we would like to discuss Mandarin nominal and verbal classifiers, for they are an important component in Mandarin derived nominals (and Mandarin noun phrases in general).

There are nominal and verbal classifiers in Mandarin. Canonically, nominal classifiers apply to nouns (see (2)) and verbal classifiers apply to verbs or verb phrases (see (3)).

- (2) na            san    ge    ren  
      that        three CL   person  
      ‘those three people’



- (3) Ta likai-le yi ci.  
 he leave-ASP a CL  
 ‘He left once.’

Verbal classifiers may also appear in noun phrases. As discussed in Section 3.1, *ta de likai* ‘his departure’ in (4) is a derived nominal; verbal classifier *ci* precedes the head noun *likai* ‘departure’.

- (4) ta de liang ci likai  
 he DE two CL leave  
 ‘his two departures’

As our study centers on noun phrases, we restrict our discussion on verbal classifiers to those appearing inside noun phrases.<sup>59</sup>

Concerning the syntactic status of Mandarin nominal classifiers, we adopt the commonly accepted structure illustrated below (Tang 1990a, b):

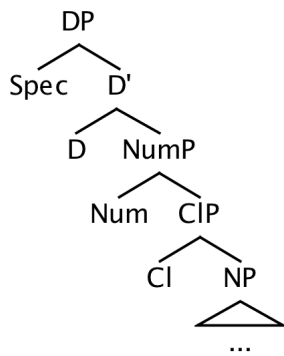
- (5)

---

<sup>59</sup> Our analysis of verbal classifiers in Mandarin AS-nominals does not assume that verbal classifiers in sentences and in noun phrases should have the same syntactic structure. In sentences, verbal classifiers appear in frequency phrases such as (i) and (ii). Not all classifiers of frequency phrases can appear in noun phrases, as shown in (iii).

- (i) Ta likai-le **san ci**.  
 he leave-ASP three CL  
 ‘he left three times.’  
 (ii) Ta ousha-le Zhangsan **san xia**.  
 he hit-ASP Zhangsan three CL  
 ‘He hit Zhangsan three times.’  
 (iii) ta dui Zhangsan de san ci / \*san xia ousha  
 he DUI Zhangsan DE three CL three CL hit

Thus, our analysis of verbal classifiers as having the same syntactic structure as nominal classifiers applies to the nominal domain only. We do not discuss the structure of frequency phrases, for this is outside the scope of the thesis. This is also the reason for our using “verbal classifiers” rather than “frequency phrases” in the discussion on Mandarin AS-nominals.



In (5), DP is related to reference (Abney 1987).<sup>60</sup> NumP is the Numeral Phrase, whose head is a numeral like *san* ‘three’ in (2). CIP is headed by a classifier like *ben* in (2). Cl imposes units on the denotation of the noun (Cheng and Sybesma 1999), so that counting by Num is possible. As to the NP projection, we consider that it may contain finer structures than a simple N projection. This point has been exemplified in the study of English AS-nominals in Section 2.3 and will be illustrated by Mandarin data later in this section.

In noun phrases, verbal classifiers have similar distribution as nominal classifiers. In the three pairs of examples below, the (a) examples involve a nominal classifier and the (b) examples involve a verbal classifier. The examples in (6) illustrate their basic distribution: classifiers appear between numerals and the head noun. The examples in (7) demonstrate that both noun phrases allow for outer modifiers. The examples in (8) show that both permit inner modifiers.

- (6) a. *san ben shu*  
       three CL book

---

<sup>60</sup> We do not consider that demonstratives like *na* ‘that’ in (2) is projected as D. It has been argued that demonstratives can be generated in a functional projection below DP (see for instance, Bernstein 1993, 1997, Brugè 1996, Cheung 2007, Giusti 1997). Since our study does not depend on the syntactic analysis of demonstratives, we do not go into the details.

‘three books’

b. san ci lüxing

three CL trip

‘three trips’

(7) a. houhou de san ben shu

thick DE three CL book

‘three thick books’

b. yukuai de san ci lüxing

happy DE three CL trip

‘three happy trips’

(8) a. san ben houhou de shu

three CL thick DE book

‘three thick books’

b. san ci yukuai de lüxing

three CL happy DE trip

‘three happy trips’

Mandarin nominal classifiers have been widely studied (Cheng and Sybesma 1999, Huang 1982, Tang 1990a, b, among others) but there have been no specific studies on the syntax of Mandarin verbal classifiers in noun phrases. Due to their similar syntactic distribution and function in noun phrases, we assume the same syntactic analysis for verbal classifiers as that for nominal classifiers; that is, verbal classifiers like *ci* project CLP in Mandarin noun phrases.<sup>61</sup> Having specified

---

<sup>61</sup> Prof. Candice Cheung points out that verbal classifiers in noun phrases allow the insertion of *de*, which is similar to the so-called massifiers (Cheng and Sybesma 1999) rather than to count-classifiers; so verbal classifiers should not have the structure proposed here.

the noun phrase structure in Mandarin, we proceed to discuss the structure of Mandarin AS-nominals.

#### 4.1.2 The underlying VP

We observe that the underlying VP in Mandarin AS-nominals is not full-fledged. The first evidence for the minimal VP in Mandarin AS-nominals comes from verbs with unaccusative-causative alternations. Only the unaccusative verb can form AS-nominals. For instance, *chengli* ‘establish’ can be unaccusative (see (9)) or causative (see (10)). Only the former can form AS-nominals, as illustrated by the contrasting examples in (11) and (12).

- (9) Gongsì chengli-le.  
       company establish-ASP  
       ‘The company has been established.’

---

We consider that the presence and absence of *de* after classifiers is associated with different nominal structures. The point is best illustrated with massifiers. When *de* is present (see (ii)), the meaning of the noun phrase changes. In the situation depicted in (i), there are three bowls with wine; in (ii), there may be no bowls at all; it is only the amount of three bowls of wine that is talked about (see also Cheng and Sybesma 1998).

- (i) zhuozì-shàng yǒu **sān wǎn jiǔ**.  
     table-on have three CL wine  
     ‘There are three bowls of wine on the table.’  
 (ii) Zhè ge píngzi néng zhuāng **sān wǎn de jiǔ**.  
     this CL bottle can hold three bowl DE wine  
     ‘This bottle can hold (the amount of) three bowls of wine.’

Due to the differences in semantics, we do not consider that the bold-faced noun phrases in (i) and (ii) have the same structure. The massifier *wǎn* ‘bowl’ in (i) heads a Cl projection as shown in (5). As to the structure of *sān wǎn de jiǔ* in (ii), we consider *sān wǎn de* to be a modifier of the noun.

Verbal classifiers also allow *de* to appear after it, as shown in (iii). Similar to massifiers (see (i) and (ii)), the noun phrases in (iii) with and without *de* involve different structures.

- (iii) sān cǐ (de) diào chá  
       three CL DE investigation  
       ‘three investigations’

More importantly, in Mandarin AS-nominals, *de* does not appear after verbal classifiers (see (iv)). Therefore, we maintain that verbal classifiers in Mandarin AS-nominals head the Cl projection (see (5)).

- (iv) Zhè běn shù de liǎng cǐ (\*de) chū bān      dōu hěn shùn lì.  
     this CL book DE two CL DE publication both very smooth  
     ‘The books two publications both went smoothly.’

- (10) Tamen      chengli-le      gongsi.  
                  they          establish-ASP company  
                  ‘They established the company.’
- (11) gongsi      de      chengli  
                  their          DE      establish  
                  ‘the company’s establishment’
- (12) \*tamen      dui      gongsi          de      chengli  
                  their          to      company          DE      establishment  
                  Intended: ‘their establishment of the company’

Since causative constructions involve one more VP layer than unaccusatives (e.g., Baker 1988, Hale and Keyser 1993), the data above suggest that AS-nominals contain a minimal VP.

The second evidence comes from compound verbs such as *dapo* ‘hit.break’ in (13). It has been argued that Mandarin verb-resultative (VR) compounds are syntactically formed through head movements (e.g., Lin 2001). The syntactic structures of VR-compounds include at least two VP-layers. These compounds cannot form AS-nominals (see (14) and (15)).

- (13) Zhangsan          **dapo-le**          boli  
                  Zhangsan          hit.break-ASP glass  
                  ‘Zhangsan broke the glass.’
- (14) \*Zhangsan          dui      boli      de      dapo  
                  Zhangsan          to      glass      DE      hit.break  
                  Intended: ‘Zhangsan’s breaking the glass’

- (15) \* boli      de      dapo  
          glass      DE      hit.break

In Mandarin, some VR compounds are lexicalized to form a single verb. *Dapo* ‘hit.break’ is one of such verbs. As a compound, it means ‘hit and break’. As a simple verb, it means ‘break’ in an abstract sense (see (16)). As shown in (17), this simple verb can form an AS-nominal, forming a clear contrast with (15).

- (16) Zhangsan dapo-le                      guiju.  
          Zhangsan break-ASP      rule  
          ‘Zhangsan broke the rule.’

- (17) guiju de dapo  
          rule DE break  
          ‘the breaking of the rule’

The third evidence comes from ditransitive verbs. Ditransitive verbs (e.g., *zengsong* ‘give’ in (18)) have more than one VP-layer (Larson 1988). In the AS-nominal formed by a ditransitive verb, only the theme can appear. Example (19) demonstrates that the theme *lipin* ‘gift’ can appear in the AS-nominal; (20) and (21) shows that the goal and the agent cannot appear in the AS-nominal.

- (18) Zhangsan zengsong-le    lipin    gei    Lisi.  
          Zhangsan give-ASP      gift      to      Lisi  
          ‘Zhangsan gave some gifts to Lisi.’

- (19) lipin de zengsong

gift DE give

‘the giving of gifts’

(20) \**gei Lisi de zengsong*

to Lisi DE give

(21) \**Zhangsan (dui lipin) de zengsong*

Zhangsan to gift DE give

In sum, data from verbs with unaccusative-causative alternations, VR compounds, and ditransitives indicate that the underlying VP in Mandarin AS-nominals is the minimal verbal projection of the verb. That is why Mandarin AS-nominals do not exhibit many verbal properties (e.g., do not allow verbal modifiers, see Section 3.3.2) although there are underlying verbal projections. We may express this as a parameter:

(22) The Mandarin nominalizing element in AS-nominals selects a minimal verbal projection.

#### 4.1.3 Mandarin AS-nominals

According to our observation, *zhe ben shu de liang ci chuban* ‘the book’s publishing twice’ in (23) is an AS-nominal.

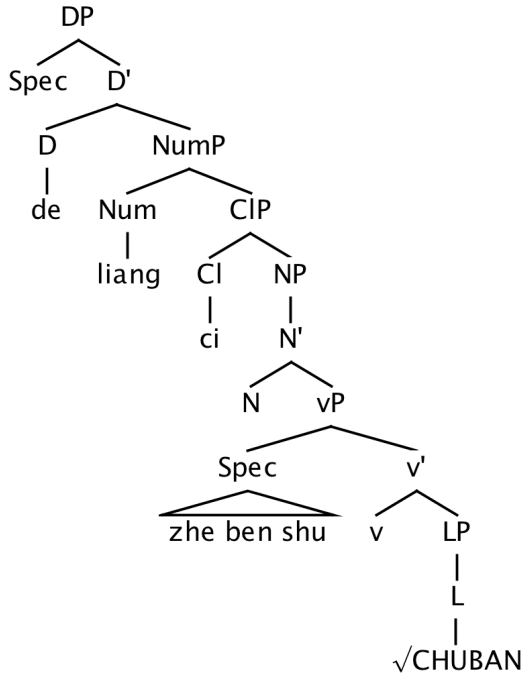
(23) *Zhe ben shu de liang ci chuban dou hen shunli.*

this CL book DE two CL publication both very smooth

‘This book’s publishing twice were both very smooth.’

Based on the discussion on English AS-nominals and the structure of Mandarin noun phrases, we propose the following structure for Mandarin AS-nominals.

(24)



In (24), the internal argument *zhe ben shu* ‘this book’ is introduced by the verbalizing category *v* (see also Section 1.1 and Section 2.3.2). The LP is headed by the Root  $\sqrt{\text{CHUBAN}}$ , which is category-neutral. The vP is the underlying verbal structure in the AS-nominal. Starting from NP, it is the nominal domain, with N as the nominalizing head. Cl creates the units for counting and Num counts. D is the determiner, and as discussed in Section 3.3.3, D is occupied by *de* in Mandarin AS-nominals. Our analysis maintains the insights from Fu (1994), including the existence of verbal projections and nominalizing heads within AS-nominals.<sup>62</sup> We

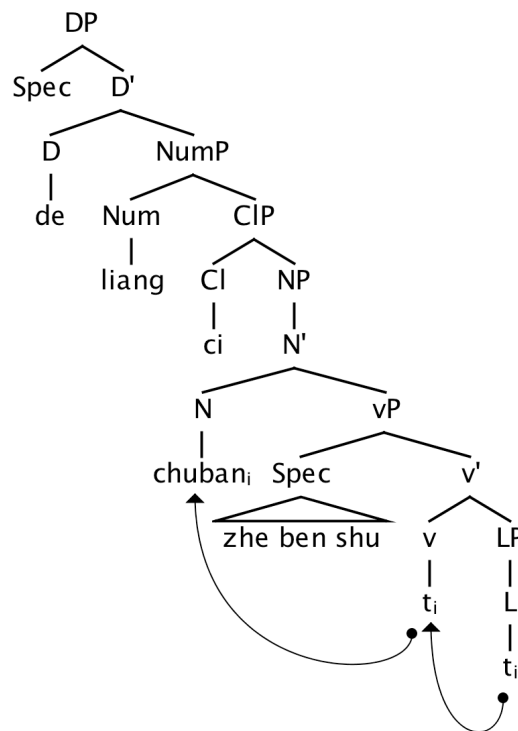
<sup>62</sup> For simplicity the null nominalizing and verbalizing morphemes are not represented in our tree diagrams.



follow Simpson (2002) in treating Mandarin *de* as D. The vP part maintains the structure that has been verified by various languages in the DM framework (e.g., Alexiadou 2001).

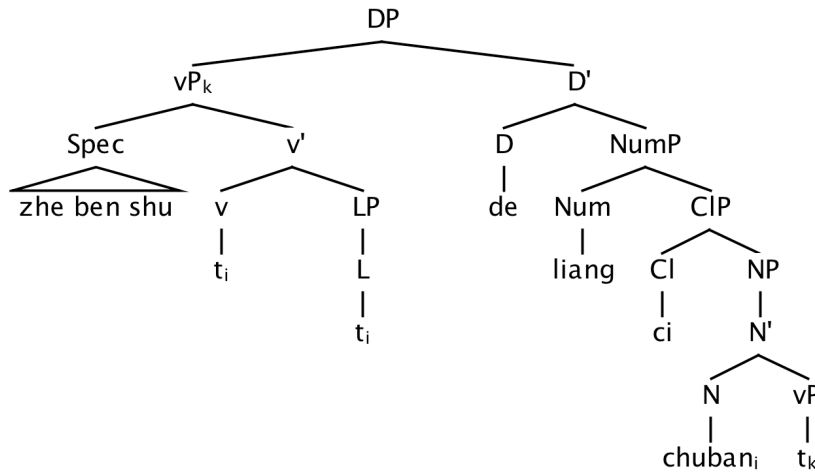
In the derivation, the Root  $\sqrt{\text{CHUBAN}}$  ‘publish/publication’ undergoes head-movements to v to be categorized. It further moves to N, so as to support the phonological realization of the nominalizing morpheme. The product is a derived noun *chuban* ‘publication’.

(25)



Then, the vP undergoes remnant movement to Spec, DP to give phonological support to the enclitic *de* in the same fashion as discussed in Simpson (2002).

(26)



In (24) to (26), the underlying verbal projections account for the argument structure of AS-nominals and the connection between AS-nouns and their verbal counterparts. In this way, noun-verb variation is explained by the change in functional projections. Variation in functional projections also accounts for the difference between English and Mandarin. The enclitic property of Mandarin *de* attracts the vP to undergo remnant movement (see (26)); consequently, in Mandarin, arguments in AS-nominals precede the head noun, while in English, they follow the head noun. In sum, the syntactic properties of Mandarin derived nominals and the differences between English and Mandarin derived nominals are all accounted for by variations in functional projections.

The structure in (26) provides a natural explanation for the restriction on the type of Roots in Mandarin AS-nominals. There are two factors: one is the nature of the underlying *v*; the other is the presence of Cl projection. We look at the latter first. We have observed that Mandarin AS-nominals allow only Roots denoting telic events. This observation finds correlation with the Romanian infinitive nominals introduced in Section 2.3.3. Recall that the Romanian infinitive

nominalization requires the verbal head to be telic (Iordăchioaia and Soare 2008). The reason for this requirement is attributed to the boundedness encoded in Cl and in v (Alexiadou et al. 2010). Since Cl is [count], which is [+bounded], it requires that the v that it governs to be [+bounded], too.<sup>63</sup> So the v must select a telic Root. In Mandarin AS-nominals, this requirement also applies. As both Cl and v are present and Cl is [count], only telic Roots are allowed in Mandarin AS-nominals.<sup>64</sup>

We have observed in Section 3.1.3 that AS-nominals do not allow the appearance of the external argument. In English, however, AS-nouns denoting telic events may have two arguments. The contrast is illustrated by the ungrammatical Mandarin nominal and its English translation in (27).

- (27) \*tamen dui zhe ben shu de chuban  
they DUI this CL book DE publication  
Intended: ‘their publication of the book’

Our analysis can account for this contrast. Following Marantz (1997), we consider that VoiceP is not projected in AS-nominals and thus external arguments are not obligatory (see Section 2.3.3; see also Grimshaw 1990). In English, the external

---

<sup>63</sup> As pointed out by Prof. Thomas Lee, not all classifiers in Mandarin are [count] (see also Chao 1968). For instance, there are classifiers for mass nouns and these classifiers do not require the noun to be countable at all.

Our explanation relies on the semantic difference between sortal classifiers and verbal classifiers. Sortal classifiers can be employed to count mass entities (like water) by imposing a boundary to the entities (e.g., a cup forms a boundary for the water in the cup). However, verbal classifiers can only count bounded events but cannot impose boundaries to events. In sentences, there are aspect markers and adverbial modifiers to delimitate events; in AS-nominals, as the underlying vP is a minimal verbal projection, its telicity is solely determined by the verb. If the verb is atelic, the verbal classifier fails to count the event, for there is no bounded event to be counted.

<sup>64</sup> English does not have requirements on the telicity of the Root in AS-nominals. We assume that this is due to the typological difference between English and Mandarin: Mandarin is a classifier language but English is not. English AS-nominals do not project Cl and thus do not impose requirements on the lower v and Root.

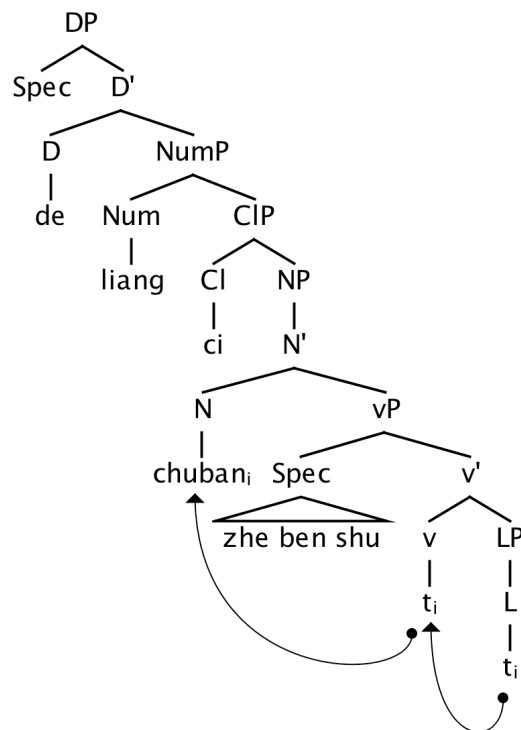
argument is realized as an adjunct in the form of a possessor (see (28)) or a *by*-phrase (see (29)).

(28) John's establishment of the company

(29) the establishment of the company by John

In the structure we proposed for Mandarin AS-nominals (repeated as (30)), the external argument may be realized as the specifier of the DP headed by *de*. If this were the case, no remnant movement would be needed, for *de* already received phonological support from the external argument.

(30)



If no remnant movement were motivated, the following string would be produced.

- (31) \**tamen de liang ci [N chuban] (dui) [DP zhe ben shu]*  
 they DE two CL publication DUI this CL book

There are several problems with this string. Firstly, *zhe ben shu* is not assigned case. It cannot receive case from *chuban* because *chuban* ‘publication’ is nominalized. Nor can it receive case from *de*, because *de* has already assigned genitive case to *tamen* ‘they’. Secondly, the head noun *chuban* is not at the right periphery of the noun phrase. This does not conform to the general pattern of noun phrases in Mandarin (i.e., the semantic head of a Mandarin noun phrase appears at the right edge of the noun phrase). So even if *dui* is inserted to assign case to *zhe ben shu* ‘this book’, the string in (31) is still ungrammatical.

Our analysis of Mandarin AS-nominals also makes a correct prediction about the position of classifiers in AS-nominals. Since one Mandarin noun phrase has at most one Cl projection, if the argument in the AS-nominal is part of Spec, DP, we predict that there can be no classifier preceding this argument.<sup>65</sup> This prediction is borne out in (32) and (33).

- (32) \**liang ci [DP zhe ben shu de [CIP chuban] ]*  
 two CL this CL book DE publication
- (33) \**san ci [DP Lisi de [CIP likai] ]*  
 three CL Lisi DE departure

---

<sup>65</sup> This prediction is crystalized in the discussions with Hoi-ki Law, Audrey Li, Rint Sybesma, Jiahui Yang, and especially Haoze Li.

According to our analysis, [DP *zhe ben shu* de [CIP *chuban*] ] in (32) has a CI projection, although the classifier is not spelled out. Thus, the presence of another classifier *ci* is prohibited.<sup>66</sup>

This possibility is worth considering because ordinary noun phrases may have such word order (see also Section 4.1.1). As illustrated by the ordinary noun phrases in (34) and (35), it is possible to have the word order of [numeral + classifier + proper name + *de* + noun], which is the same as the ungrammatical examples in (32) and (33).

- (34) *liang ben* [NP *Zhangsan de shu* ]  
 two CL Zhangsan DE book  
 ‘Zhangsan’s two books’

- (35) *san zhi* [NP *Lisi de bi*]  
 three CL Lisi DE pen  
 ‘Lisi’s three pens’

---

<sup>66</sup> Prof. Candice Cheung observes that frequency phrases with a demonstrative can precede AS-nominals.

- (i) *zhe yi ci* *Honglouloumeng* de *chuban*  
 this a CL red.chamber.dream DE publication  
 ‘the publication of Dream of the Red Chamber this time’

We consider that *zhe yi ci* ‘this time’ is a modifier. Such modifiers can appear in sentences, too.

- (ii) **Wo** ***zhe yi ci*** *mai-le* *liang ben shu*.  
 I this CL time buy-ASP two CL book  
 ‘I bought two books this time.’  
 (iii) ***Zhe yi ci***, *Zhangsan de baba ye qu-le*.  
 this a CL Zhangsan DE father also go-ASP  
 ‘This time, Zhangsan’s father went there, too.’

We suggest that *zhe yi ci* in (i) is not part of the AS-nominal, but a verbal modifier in the sentence (see (iv)), just like in (ii) and (iii).

- (iv) *Zhe yi ci*, *Honglouloumeng* de *chuban* *hen chenggong*.  
 this a CL red.chamber.dream DE publication very successful  
 ‘This time, the publication of Dream of the Red Chamber is very successful.’

According to our analysis, the [proper name + *de* + noun] sequence in ordinary noun phrases is not necessarily a DP, whereas in AS-nominals, the proper name is the argument of the head noun and the [proper name + *de* + noun] sequence is a DP.<sup>67</sup> Thus, our analysis correctly predicts that (32) and (33) are ungrammatical.

The second factor is the underlying *v* projection. The semantic meaning of the null *v* is similar to GET (the passive *get* in English).<sup>68</sup> The lexical conceptual relation between the argument in the Spec of *v*P and the head *v* is that the argument undergoes an event. The content of the event is provided by the LP or the Root. It has been discussed in Section 4.1.2 that the underlying *v*P is a minimal verbal projection. Now we further understand the semantics of this *v*P. The nature of the underlying *v*P also do not allow external arguments to be present in the *v*P; in other words, the parameter for the Mandarin nominalizing morpheme in AS-nominals do not select verbal projections with two arguments (see also Section 4.1.2). This parameter also forbid verbs denoting activity (i.e., atelic verbs) from entering the underlying *v*P of AS-nominals, for activity-denoting verbs need the external argument to form a complete verbal projection. In contrast, the telic verbs we have discussed convey a complete event with the internal argument. The nature of the underlying *v*P also result in the generalization we made in Section 3.1. We suggest that the Cl projection and the nature of the underlying *v*P word together, giving rise to the special properties of Mandarin AS-nominals.

Our analysis is more advantageous than the lexicalist approach to Mandarin AS-nominals because our analysis accounts for various syntactic properties of AS-nominals that the lexicalist approach cannot. Our analysis can explain why Mandarin AS-nominals only permit telic Roots and why they only allow one

---

<sup>67</sup> As discussed in Section 3.3.3, the Mandarin *de* appearing between the classifier and the head noun is not D.

<sup>68</sup> Prof. Yang Gu, personal communication.

argument. The reason is that the AS-nominal contains both nominal and verbal projections and the boundedness feature of the *v* in the verbal domain must match the boundedness feature of the *Cl* in the nominal domain; in addition, Mandarin AS-nominals are based on minimal verbal projections consisting of the innermost argument, the verbalizing head *v*, and the Root denoting the content of event. That only one argument is allowed in Mandarin AS-nominals is due to absence of VoiceP and the general structure of Mandarin noun phrases.

Our analysis fares better than the proposals of Fu (1994) and Simpson (2002) in that our analysis can account for the special properties of Mandarin AS-nominals and the difference between Mandarin and English AS-nominals. The difference is attributed to the *Cl* projection in Mandarin, which is absent in English AS-nominals, for English is not a classifier language.

In the next subsection, we discuss the syntactic structures of simple event nominals and result nominals, because they are closely related to AS-nominals and that simple event nominals can be easily confused with AS-nominals.

#### 4.1.4 simple event nominals and result nominals

Mandarin simple event nouns and result nouns may share the same phonological form. For instance, *baodao* ‘report’ may be a simple event noun or a result noun. As a simple event noun, it denotes an activity of reporting something, as in (36). As a result noun, it denotes a piece of writing (see (37)).

(36) **Ta dui zaiqing de san ci baodao** dou hen shunli.

she DUI disaster DE three CL report all very smooth

‘Her three reports on the disaster all went smoothly.’



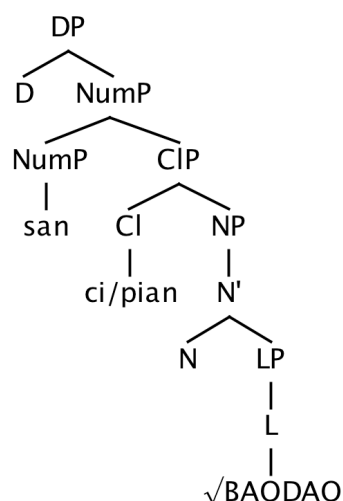
(37) **Ta dui zaiqing de san pian baodao** dou hen shenru.

she DUI disaster DE san CL report all very insightful

‘Her three reports on the disaster are all very insightful.’

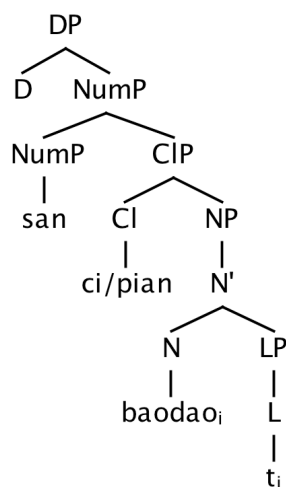
As discussed previously, neither simple event nouns nor result nouns have argument structures. Thus, neither of them should have underlying verbal projections. The basic structure for simple event nouns and result nouns is given below (irrelevant details aside):

(38)



The Root undergoes head-movement to the N position, to support the null nominalizing morpheme at N. A noun *baodao* ‘report’ is thus generated, as shown below.

(39)



The specific interpretation for each derived noun is determined by the Encyclopedia and the context. If the information from the rest of the sentence or the larger context indicates that an entity-denoting noun is required, the derived noun is interpreted as a result noun. For instance, the classifier *pian* in (37) is used for nouns denoting entities like articles; thus, *baodao* ‘report’ in (37) is interpreted as an entity-denoting noun. If the context requires an event-denoting noun, the derived noun is interpreted as a simple event noun. For instance, the verbal classifier *ci* is used for the counting of events; hence, *baodao* ‘report’ in (36) is interpreted as denoting an event. One type of the contexts is reflected in the choice of classifiers. Moreover, only events can be described as going smoothly; so the context in (36) also forces the derived noun *baodao* ‘report’ to be interpreted as a simple event noun.

In the structure for simple event nominals and result nominals we proposed in (39), there is CIP projection but there is no vP projection. As the Root is directly nominalized by N, there is no requirement on the correspondence of boundedness between the nominal and verbal domains—there is no verbal domain in (39).

Therefore, although the CI in (39) is also [count], Roots denoting atelic events can enter the structure. This is exactly what we have observed.

In sum, we consider that there are no verbal projections in simple event nominals and result nominals. This analysis is motivated by the absence of argument structure in the two types of nominals and confirmed by the type of Roots permitted in these nominals.

#### 4.1.5 Psych nouns

Besides AS-nominals, simple event nominals, and result nominals, Mandarin seems to have another type of nominals, which share some similarities with AS-nominals. Nouns such as *xinxin* ‘confidence’ and *xingqu* ‘interest’ in (40) below describe psychological states. They are called “psych nouns” by Fu (1994), for they do not have verbal counterparts (see (41)).

(40) Zhangsan dui Lisi de xinxin / xingqu

Zhangsan DUI Lisi DE confidence interest

‘Zhangsan’s confidence / interest in Lisi’

(41) \* Zhangsan xinxin / xingqu Lisi.

Zhangsan confidence interest Lisi

Fu (1994) considers that they are similar to AS-nouns like *diaocha* ‘investigation’ in (42), for pschy nouns seem to take arguments (*Zhangsan* and *Lisi* in (40)).<sup>69</sup> The example in (43) exemplifies the argument-taking property of the verb form of *diaocha* ‘investigate’.

---

<sup>69</sup> As stated in Section 3.3.1, Fu (1994) treats *diaocha* as an AS-noun, but we do not.

- (42) Zhangsan dui Lisi de diaocha  
 Zhangsan DUI Lisi DE investigation  
 ‘Zhangsan’s investigation of Lisi’
- (43) Zhangsan diaocha-le Lisi.  
 Zhangsan investigate-ASP Lisi  
 ‘Zhangsan investigated Lisi.’

If psych nouns were AS-nouns, they should have underlying verbal structures as well. But neither *xinxin* ‘confidence’ nor *xingqu* ‘interest’ can function as verbs (see (41) above). As there are no such verbs, it appears difficult to derive (40) from underlying VPs. Fu (1994) hence admits that her proposal cannot account for psych nouns.

In our analysis, psych nouns do not pose a problem. They are not AS-nouns. The crucial data involve the optionality of the “arguments” of psych nouns. As shown in (44), *xinxin* and *xingqu* can appear without any arguments, forming a sharp contrast with derived nouns like *chuban* ‘publication’ in (45).

- (44) Zhe fen xinxin / xingqu hen zhongyao.  
 this CL confidence interest very important  
 ‘Such confidence / interest is very important.’
- (45) \*(Zhe ben shu de) liang ci chuban dou dedao henduo zhichi.  
 this CL book DE two CL publication both receive many support  
 ‘The publication of this book has received much support both times.’

Thus, psych nouns are not AS-nouns and they belong to the same group as simple event nouns, result nouns, and ordinary noun phrases, for none of them have underlying verbal structures.

In conclusion, our analysis formulated under the DM framework demonstrates that word category is derived in syntax rather than stored in the lexicon as lexical information. Category-neutral Roots can be nominalized or verbalized in syntax; in other words, the realization of word category depends on the type of functional projections. Moreover, our analysis supports the view that argument structure is syntactically realized through argument-introducing functional projections. We show that realizing argument structure through functional projections can provide satisfactory answers to our observation about the special properties of Mandarin AS-nominals and to the differences between AS-nominals and non-argument-taking nominals.

#### 4.2 Counterevidence to our proposal

In Chapter 3, we have listed supporting evidence for analyzing the semantic heads of derived nominals as nouns. Here we examine some counterexamples. We argue that they do not refute the conclusion drawn in Chapter 3, because these examples do not belong to the derived nominals in our study.

Some scholars argue that the semantic heads of Mandarin AS-nominals are verbs (Cheng 1999, He and Wang 2007, Hu and Fan 1994, Lu 2003, Si 2004, Xiong 2005, Zhang 1993, Zhu 1982, 1985, Zhu, Lu, and Ma 1961). Supporting evidence comes from the type of data in (46) and (47). Their corresponding sentences are provided in (48) and (49).

- (46) *wo de juebu yao tougaozhe xiangjian*  
 I DE never invite contributor meet  
 ‘my never inviting contributors to meet’ (Hu and Fan 1994:83 (15))
- (47) *Wo de huran you xiangqi-le jishu...*  
 I DE sudden again remember-ASP worship.book  
 ‘my suddenly remembering again the book-worshipping rite’  
 (Zhang 1993:257 (48))
- (48) *Wo juebu yao tougaozhe xiangjian.*  
 I never invite contributor meet  
 ‘I never invite contributors to meet.’
- (49) *Wo huran you xiangqi-le jishu.*  
 I sudden again remember-ASP worship.book  
 ‘I suddenly remembered the book-worshipping rite again.’

In both the phrase in (46) and the sentence in (48), *yao* ‘invite’ is followed by the theme argument *tougaozhe* ‘contributor’ and negated by the adverb *juebu* ‘never’. In both (47) and (49), the theme argument *jishu* ‘book-worshipping’ is in the object position of *xiangqi* ‘remember’; also, *xiangqi* is followed by an aspect marker *le*. It is commonly understood that verbs can assign case to their theme arguments, be modified by adverbs, and have aspect markers. Thus, *yao* ‘invite’ in (46) and *xiangqi* ‘remember’ in (47) should be verbs; they are not nominalized at all and still retains all aspects of verbal behaviors.

We argue in the following that these data are not the AS-nominals under discussion; they are another type of nominals, which are more comparable to the English gerundive nominals discussed in Chapter 2. We call the phrases in (46) and

(47) “Mandarin gerundive nominals.” In the following, we develop a test to separate Mandarin AS-nominals and gerundive nominals based on their ability to denote events.

#### 4.2.1 Events and facts

The distinctions between eventive readings and factual readings have been systematically discussed in the literature on English (Bennett 1988, Parsons 1990, Vendler 1967). In the following, we examine their distinctions and the tests for the two readings. And then, we apply similar tests to Mandarin data, so as to separate AS-nominals from the confounding gerundive nominals.

Vendler (1967) distinguishes “perfect nominals” (in which the verb acts like a noun) and “imperfect nominals” (where the verb still exemplifies verbal features, such as assigning case to the internal argument). Please refer to the examples below.

(50) Examples of perfect nominals:

*the beautiful singing, John’s singing of the Marseillaise*

(51) Examples of imperfect nominals:

*that John sings, John’s singing the Marseillaise, John’s being able to sing*

(Vendler 1967:131-141)

Perfect nominals include AS-nominals (e.g., *John’s singing of the Marseillaise* in (50)) and imperfect nominals include gerundive nominals (e.g., *John’s being able to sing* in (51)).

Semantically speaking, imperfect nominals refer to facts; perfect nominals are ambiguous and may refer to events or facts (Vendler 1967). In other words, a perfect nominal may refer to the event itself, so that one may talk about the properties of the event, such as where it took place or how long it lasted; alternatively, one may use the perfect nominal to assert that an event has happened, which is a fact. For instance, the perfect nominal *the collapse of the Germans* may refer to the event of the Germans' collapsing or the fact that the Germans have collapsed.<sup>70</sup>

Vendler (1967) suggests that words like *surprise* and *occur* serve as tests for fact-denotation and event-denotation. Representative words that are semantically compatible with facts are *surprise*, *mention*, and *deny*; words compatible with events include *occur*, *last*, *see*, and *observe* (Vendler 1967). Facts can surprise us or be mentioned/denied. Events but not facts can occur, last for a certain time, and be seen or observed. If a phrase denotes a fact, it should be compatible with *surprise*, *mention*, and *deny*. If a phrase denotes an event, it should be compatible with *occur*, *last*, *see*, and *observe*. Since perfect nominals are ambiguous, they pass tests for fact-denotation (see (52)) and event-denotation (see (53)).

(52) a. John's singing of the Marseillaise was denied.

b. John's singing of the Marseillaise surprised us.

(53) a. John's singing of the Marseillaise was sudden.

b. John's singing of the Marseillaise lasted ten minutes.

---

<sup>70</sup> According to Zucchi (1993), the reason that perfect nominals can denote fact is due to the presuppositions carried by nouns. When we refer to an entity with a noun phrase and talk about the entity, we presuppose that such an entity exists. Similarly, if we talk about an event, we may presuppose that such an event has taken place. That a certain event has taken place is a fact.



Imperfect nominals only pass the tests for fact-denotation, as shown in (54), and fail the tests for event denotation, as shown in (55).

(54) a. John's being able to sing was denied.

b. John's being able to sing surprised us.

(55) a.\*John's being able to sing was sudden.

b.\*John's being able to sing lasted ten minutes.

Hence, the tests for event-denotation play a crucial role in differentiating perfect and imperfect nominals. Relating Vendler's tests to our discussion, we conclude that English AS-nominals (e.g., *John's singing of the Marseillaise*) can denote events but English gerundive nominals (e.g., *John's being able to sing*) cannot denote events.

In the next subsection, we apply similar tests to Mandarin. The results show that Mandarin AS-nominals can denote events but Mandarin gerundive nominals cannot.

#### 4.2.2 Mandarin gerundive nominals and event-denotation

We use Mandarin *fouren* 'deny' and *shi shishi* 'be true' as tests for the fact interpretation; we employ Mandarin *mudu* 'witness' and *hen turan* 'very sudden' as tests for the event interpretation. Similar to Vendler's tests for English nominals, our tests are based on semantic interpretations. People can deny a fact or claim that a fact is true; but an event cannot be denied or claimed to be true. Instead, an event can be witnessed or described as occurring very sudden; yet a fact cannot be witnessed or occur suddenly. The sentences below apply the tests to *wo de juebu*

*yao tougaozhe xiangjian* ‘my never inviting contributors to meet’ in (48) and the AS-nominal *Zhangsan de xiaoshi* ‘Zhangsan’s disappearance’.

- (56) a. *Ta fouren-le wo de juebu yao tougaozhe xiangjian.*  
 he deny-ASP I DE never invite contributor meet  
 ‘He denied my never inviting contributors to meet.’
- b. *Wo de juebu yao tougaozhe xiangjian shi shishi.*  
 I DE never invite contributor meet be fact  
 ‘My never inviting contributors to meet is a fact.’
- c. \**Ta mudu-le wo de juebu yao tougaozhe xiangjian.*  
 he witness-ASP I DE never invite contributor meet
- d. \**Wo de juebu yao tougaozhe xiangjian hen turan.*  
 I DE never invite contributor meet very sudden

The grammaticality of the (a) and (b) sentences above shows that *wo de juebu yao tougaozhe xiangjian* ‘my never inviting contributors to meet’ may denote a fact; the ungrammaticality of (c) and (d) means that it cannot denote an event. In contrast, *Zhangsan de xiaoshi* ‘Zhangsan’s disappearance’ passes all the tests, as shown below.

- (57) a. *Ta fouren-le Zhangsan de xiaoshi.*  
 he deny-ASP Zhangsan DE disappearance  
 ‘He denied Zhangsan’s disappearance.’
- b. *Zhangsan de xiaoshi shi shishi.*  
 Zhangsan DE disappearance be fact

‘Zhangsan’s disappearance is a fact.’

c. Ta mudu-le    *Zhangsan de xiaoshi*.

he witness-ASP Zhangsan DE disappearance

‘He witnessed Zhangsan’s disappearance.’

d. *Zhangsan de xiaoshi*                    hen    turan.

Zhangsan DE disappearance very sudden

‘Zhangsan’s disappearance is very sudden’

Sentences (a) and (b) indicates that *Zhangsan de xiaoshi* ‘Zhangsan’s disappearance’ can denote a fact. The crucial test sentences are (c) and (d). Their grammaticality suggests that *Zhangsan de xiaoshi* ‘Zhangsan’s disappearance’ can denote an event. *Zhangsan de xiaoshi* ‘Zhangsan’s disappearance’, which we consider to be an AS-nominal, is significantly different from *wo de juebu yao tougaozhe xiangjian* ‘my never inviting contributors to meet’, which we claim to be gerundive nominals. The former can denote an event but the latter cannot, just like the contrast between English AS-nominals and gerundive nominals. Thus, the two types of Mandarin nominals should not have the same syntactic structure.

Since the two types of nominals do not have the same structure, it is possible that *wo de juebu yao tougaozhe xiangjian* ‘my never inviting contributors to meet’ contains verbs and AS-nominals contain derived nouns. Hence, the data in (46) and (47) do not refute our proposal that the semantic heads of AS-nominals are nouns. This proposal is not unprecedented. There are scholars who differentiate *mingcihua* and *mingwuhua* in Mandarin (e.g., Hu and Fan 1994, Shi 2008). *Mingcihua* refers to cases where the verb has lost its verbal features and become a noun; *mingwuhua* refers to cases where the phrase is nominal but the verb in the phrase still has

verbal properties like case-assigning ability. In this section, we have substantiated this differentiation with semantic tests.

#### 4.3 Summary

In this chapter, we have studied the structure of Mandarin derived nominals within the DM framework. In Section 3.1.3, we observed that Mandarin AS-nominals only allow Roots that denote telic events and that they only take one argument. Based on this generalization and on the study on English AS-nominals, we proposed that the syntactic structure of Mandarin AS-nominals contain both nominal and verbal projections. The Cl of the nominal domain and the v of the verbal domain must have the same boundedness feature, and therefore, the v must be [telic] to correspond with the [count] feature of the Cl (i.e., so that the event can be counted by the verbal classifier). As the v encodes the telicity of the Root, the Root must denote telic events in AS-nominals. Hence, only Roots denoting telic events form AS-nominals in Mandarin. Furthermore, the underlying vP in Mandarin AS-nominals is not full-fledged; it is a minimal verbal projection that contains the innermost argument and the verb/Root. In this way, the underlying verbal projections not only account for the presence of argument structure in AS-nominals, but also account for the number of arguments in Mandarin AS-nominals.

Due to the optionality of arguments, the psych nouns that have puzzled Fu (1994) no longer pose any problem to the syntactic approach to derived nominals, for they are no longer considered as AS-nouns. We also discussed the apparent counterexamples to our proposal on AS-nominals. The tests for event and fact denotations help us differentiate the two types of data, showing that the so-called

“counterevidence” is fundamentally different from AS-nominals. Our proposal on the structure of AS-nominals can be maintained.

Similar to English, Mandarin simple event nominals and result nominals share the same basic structure as ordinary noun phrases, in the sense that they do not contain verbal projections. In the discussion on the syntactic structure of AS-nominals, simple event nominals, and result nominals, we have exemplified how word category can be derived in syntax. The Root can be verbalized and then nominalized within the same phrase, giving rise to the mixed syntactic properties of AS-nominals. The same Root can generate nouns that take arguments and nouns that do not take arguments, which is determined by the functional categories projected above the Root. Overall, our analysis shows that DM provides a satisfactory account for Mandarin derived nominals.

## Chapter 5 Conclusion

Our study examines Mandarin derived nominals, especially the argument-taking AS-nominals like (1). The identification of AS-nominals is based on Grimshaw's (1990) proposal, which states that AS-nominals have obligatory internal arguments. The example in (1) is an AS-nominal, for the argument *zhe ben shu* 'this book' is not optional.

- (1)   zhe       ben    shu    de    chuban  
      this       CL    book DE   publication  
      'the publication of this book'

We aim at finding out an account for the word category and argument structure realization of Mandarin derived nominals. The theoretical framework we adopt is Distributed Morphology (DM), a syntactic approach. Our discussion in Chapter 2 shows that DM provides systematic analysis of derived nominals in English and Romanian. Following the DM approach, we consider that both word category and argument structure are realized in syntax through functional projections. In chapters 3 and 4, we argue that the DM approach provides a better analysis of Mandarin AS-nominals than the lexicalist approach (see Section 3.2) and than other syntactic accounts (see Section 3.3). Overall, our discussion suggests that the syntactic approach to word category and argument structure is more preferable to the lexicalist approach.

A basic objective of our study is to clarify the data on Mandarin AS-nominals. Our observation suggests that Mandarin AS-nominals constitute a smaller set of

data than previously claimed. We exclude the following types of derived nominals from AS-nominals.

- (2) Women dui zhe ge wenti de yanjiu  
we       DUI this CL issue DE study  
‘Our study of this issue’
- (3) Zhangsan dui Lisi de xinxin  
Zhangsan DUI Lisi DE confidence  
‘Zhangsan’s confidence in Lisi’
- (4) wo de juebu yao tougaozhe xiangjian  
I   DE never invite contributor meet  
‘my never inviting contributors to meet’ (Hu and Fan 1994:83 (15))

The nominals in (2) and (3) are not AS-nominals because the internal arguments *zhe ge wenti* ‘this issue’ and *Lisi* are omissible (see Section 3.1.3 and Section 4.1.5). The nominals in (4) are not the AS-nominals in our study, for they are different from AS-nominals—they cannot denote events but AS-nominals can (see Section 4.2).

Excluding these data from Mandarin AS-nominals is very important. Data like the example in (2) have been used as canonical AS-nominals in previous studies (e.g., Fu 1994), leading to problematic syntactic analysis. Phrases like (3) are (wrongly) listed as counterexamples to the proposal that AS-nominals have underlying verbal projections (Fu 1994). Data like the one in (4) have been considered to be AS-nominals and used to argue (wrongly) that the semantic heads

of AS-nominals are verbs (e.g., Lu 2003, Si 2004, Zhang 1993, Zhu, Lu, and Ma 1961).

With confounding data excluded, we are able to gain a better understanding of Mandarin AS-nominals. We observe that Mandarin AS-nominals do not allow the external argument to appear in their phrases. The example in (5) is ungrammatical due to the addition of the external argument *tamen* ‘they’ to the grammatical AS-nominal in (1).

- (5) \**tamen dui zhe ben shu de chuban*  
they DUI this CL book DE publication

However, the corresponding verbs of *chuban* ‘publication’ in (1) and (5) can be associated with two arguments, as shown below.

- (6) *Tamen chuban-le zhe ben shu.*  
they publish-ASP this CL book  
‘They have published the book.’

Based on our observation, we make the following generalization (repeated from (51) in Section 3.1.3):

- (7) In Mandarin, derived nouns denoting atelic events do not obligatorily take arguments; derived nouns denoting telic events have one and only one argument in their derived nominals; external arguments do not appear in Mandarin derived nominals denoting telic events.



This generalization has important implications. First of all, it implies that the lexicalist approach to Mandarin AS-nominals cannot be maintained. The lexicalist account (e.g., G. Shi 1981, 1988, Lin 1997) contends that AS-nominals are syntactically similar to ordinary noun phrases and that the arguments appearing inside AS-nominals are modifiers. Such an analysis cannot explain why AS-nominals only allow one argument to appear. Take (5) for example. Since noun phrases do not require the number of their modifiers to be one, and because *chuban* ‘publish’ can be associated with two arguments in sentences (see (6)), *chuban* should allow at least two modifiers in the noun phrase, that is, the data in (5) should be grammatical.

Secondly, our generalization eliminates the possibility that *pro*-drop results in the optionality of the arguments in derived nominals headed by words denoting atelic events. Mandarin *yanjiu* ‘study’ denotes an activity and it is atelic. As shown in (8), the internal argument of the derived noun headed by *yanjiu* ‘study’ is optional. Since Mandarin allows *pro*-drop (Huang 1982), one may consider that the optionality of the internal argument in (8) is due to *pro*-drop. Put differently, one may consider that the internal argument is always present in (8); the internal argument may be realized by the overt *zhe ge wenti* ‘this issue’ or the covert *pro*.

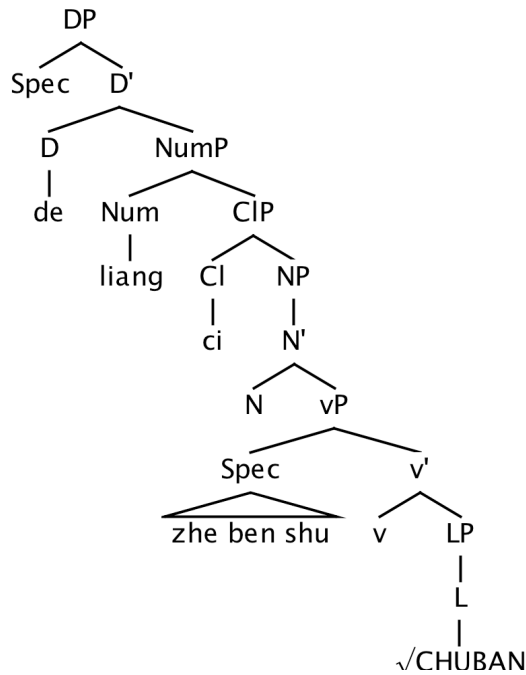
- (8) Women (dui zhe ge wenti) de yanjiu  
 we           DUI this CL issue DE study  
 ‘Our study of this issue’

Our generalization directly refutes this possibility. If Mandarin AS-nominals could have *pro*'s as arguments, there should not be any AS-nominal with obligatory overt arguments. But we have clearly observed that there are derived nominals in Mandarin that have obligatory overt arguments. Therefore, when we consider the optionality of arguments in Mandarin derived nominals, we should not use *pro*-drop as an explanation.

What's more, we propose a parameter on nominalizers and the structure they select (see Section 4.1.2). In Mandarin, the nominalizing element in AS-nominals selects a minimal verbal projection. This verbal projection contains the verb and its innermost argument and no other elements. The combination of the presence of CI and the minimal underlying verbal projection leads to our observations about the special properties of Mandarin AS-nominals.

Based on studies on English and Mandarin AS-nominals (e.g., Alexiadou 2001, 2007, Fu 1994, Simpson 2002), we propose the following tree diagram to illustrate the basic syntactic structure of Mandarin AS-nominals. The translation for the Mandarin example is provided in (10).

(9)



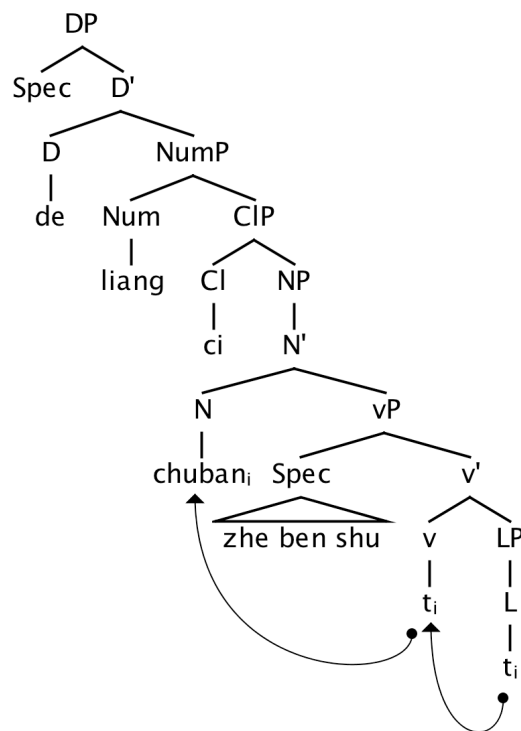
- (10) zhe ben shu de liang ci chuban  
this CL book DE two CL publication  
'this book's publishing twice'

The internal argument *zhe ben shu* 'this book' is licensed by *v* (see also Section 2.3.2); in terms of theta-roles, the noun phrase in Spec, vP is interpreted as the theme undergoing the change of state from not being published to being published (see Section 1.1). The LP is headed by the Root  $\sqrt{\text{CHUBAN}}$ , which is category-neutral. The Root is to be verbalized by *v* in syntactic derivations. The vP is the underlying verbal structure in the AS-nominal. Starting from NP, it is the nominal domain, with N as the nominalizing head. Cl creates the units for counting and Num counts. D is the determiner, and as discussed in Section 3.3.3, D is occupied by *de* in Mandarin AS-nominals. Our structural analysis maintains the insights from Fu (1994), including the existence of verbal projections and nominalizing heads within AS-nominals. We follow Simpson (2002) in treating Mandarin *de* as

D. The vP part maintains the structure in AS-nominals that has been verified by various languages in the DM framework (e.g., Alexiadou 2001; see also Section 2.3.2).

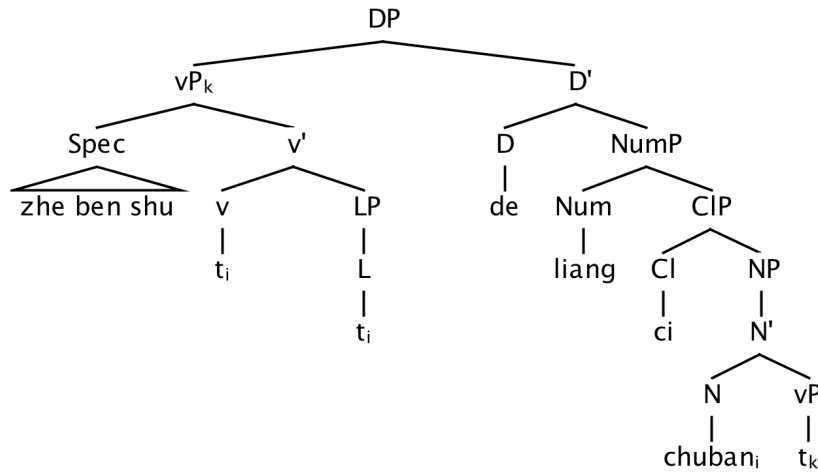
As shown below, the Root undergoes head-movements to v and then to N, so as to support the null verbalizing and nominalizing morphemes. In the process, the Root is categorized as a verb and finally as a noun.

(11)



Mandarin *de* is an enclitic and attracts the vP to move to Spec, DP for phonological support. The final structure is illustrated in (12).

(12)



The AS-nominal in (10) is thereby derived.

The structure in (9) can neatly account for our generalization on Mandarin derived nominals. Only Roots denoting telic events can enter such structure and form AS-nominals because of the requirement on telicity posed by the Cl. Mandarin Cl has the [count] feature, which is [+bounded]; it requires that the *v* it governs also has a [+bounded] feature, which is [telic] for *v*. The correlation between the boundedness feature of the *v* and the Cl has been independently proved in Romanian (see Section 2.3.3). As to English, it is not a classifier language and Cl is not projected in English AS-nominals. Hence, no telicity requirements have been observed for English AS-nominals. Moreover, Mandarin AS-nominals have only one obligatory argument because VoiceP is absent. Only the internal argument is introduced by *vP*.

AS-nominals are our focus, because their mixed verbal and nominal behaviors provide us with a good opportunity to examine the realization of word category and argument structure. Mandarin has two other types of derived nominals: simple event nominals and result nominals. Simple event nominals denote events (see (13)), while result nominals denote entities (see (14)).

(13) (Ta dui zaiqing de) san ci baodao dou hen shunli.

she DUI disaster DE three CL report all very smooth

‘Her three reports on the disaster all went smoothly.’

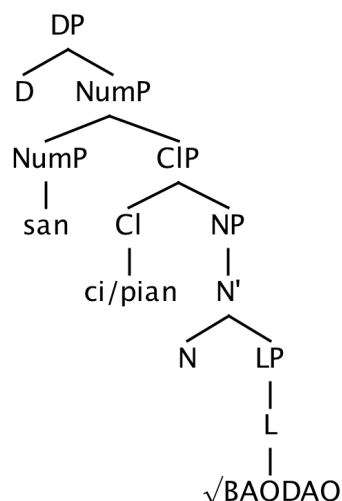
(14) (Ta dui zaiqing de) san pian baodao dou hen shenru.

she DUI disaster DE san CL report all very insightful

‘Her three reports on the disaster are all very insightful.’

Simple event nominals and result nominals do not obligatorily take arguments. indicating that they do not have argument structure. Hence, we propose a structure without verbal projections:

(15)



The Root  $\sqrt{\text{BAODAO}}$  moves to N to be categorized as a noun. Whether the resultant *baodao* ‘report’ is interpreted as denoting an event or an entity depends on the classifier. The verbal/event classifier *ci* forces an event reading and the classifier *pian* forces an entity interpretation.

The structures of AS-nominals, simple event nominals, and result nominals are all based on category-neutral Roots and functional categories. The structural analyses we proposed exemplify how word category can be derived in syntax. It is also revealed that Roots do not fully determine the syntactic structure projected over them. Instead, the Root only modifies the syntactic structure by providing basic lexical meaning and it is functional projections that determine the word category and the interpretation of the word derived from the Root (e.g., whether the word is a simple event noun or a result noun). In the similar vein, we may explore the possibility that natural language has a pool of syntactic structures for each language to choose from. As syntactic structures built from category-neutral Roots determine meaning and interpretation, the universal properties of languages are explained by their choosing from the same set of syntactic structures; cross-linguistic variations may be due to the meanings encoded in Roots (and morphemes) or due to the choice of possible structures in a certain language, both of which are language-dependent. The search for the pool of syntactic structures is an important agenda in the DM framework (Halle and Marantz 1993) and in syntactic approaches in general (e.g., Borer 2005a, b).

Overall, we have proved that realizing argument structure and word category through syntactic structures can provide a systematic and consistent explanation for inter- and intra-language variations. The DM approach is shown to be the most preferable to Mandarin derived nominals. In conclusion, the syntactic approach is more preferable to the lexicalist approach in accounting for word category and argument structure realization in derived nominals.

## Bibliography

- Abney, Steven. 1987. The English noun phrase in its sentential aspect. Doctoral dissertation, MIT.
- Alexiadou, Artemis. 2001. *Functional structure in nominals: Nominalization and ergativity*. Amsterdam: John Benjamins.
- Alexiadou, Artemis, Liliane M. V. Haegeman, and Melita Stavrou. 2007. *Noun phrase in the generative perspective*. Berlin; New York: Mouton de Gruyter.
- Alexiadou, A., G. Iordachioaia and E. Soare. 2010. Plural marking in argument supporting nominalizations. In *Layers of aspect*, ed. P. Cabredo-Hofherr and B. Laca, 1-22. Stanford: CSLI.
- Anderson, Stephen R. 1982. Where's morphology? *Linguistic Inquiry* 13: 571-612.
- Aoun, Joseph, and Yen-Hui Audrey Li. 2003. *Essays on the representational and derivational nature of grammar: The diversity of wh-constructions*. Cambridge, Mass.: MIT Press.
- Aoun, Youssouf, and Dominique Sportiche. 1983. On the formal theory of Government. *The Linguistic Review* (2): 211-236.
- Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9 (1): 5-16.
- Baker, Mark C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Bennett, Jonathan Francis. 1988. *Events and their names*. Indianapolis: Hackett Pub. Co.
- Bernstein, Judy B. 1993. Topics in the Syntax of Nominal Structure across Romance. Doctoral dissertation, CUNY.



- Bernstein, Judy B. 1997. Demonstratives and Reinforcers in Romance and Germanic Languages. *Lingua* 102: 87-113.
- Bloomfield, L. 1933. *Language*. New York: Holt, Rinehart and Winston.
- Borer, Hagit. 1991. The causative-inchoative alternation: A case study in parallel morphology. *The Linguistic Review* 8: 119-158.
- Borer, Hagit. 1993. Parallel morphology. *Ms.*, University of Massachusetts at Amherst.
- Borer, Hagit. 2003. Exo-skeletal vs. endo-skeletal explanations: Syntactic projections and the lexicon. In *The nature of explanation in linguistic theory*, ed. John Moore and Maria Polinsky, 31-67. Stanford CA: CSLI.
- Borer, Hagit. 2005a. *In name only. Structuring Sense* Vol. 1. Oxford; New York: Oxford University Press.
- Borer, Hagit. 2005b. *The normal course of events. Structuring Sense* Vol. 2. Oxford; New York: Oxford University Press.
- Brugè, Laura. 1996. Demonstrative Movement in Spanish: A Comparative Approach. University of Venice Working Papers in Linguistics 6.1.
- Chao, Yuan Ren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.
- Chen, Ningping. 1987. Xiandai hanyu mingcilei de kuoda [The expansion of nouns in modern Chinese]. *Zhongguo Yuwen* (5): 379-89.
- Cheng, Gong. 1999. Mingwuhua yu xiangxin jiegou lilun xintan [Nominalization and endocentric constructions]. *Xiandai Waiyu* (2): 128-44.
- Cheng, L.-S. Lisa and Rint Sybesma. 1998. Yi-wan tang, yi-ge tang: Classifiers and massifiers. *Tsing-Hua Journal of Chinese Studies*, new series Vol. 28 No.3, pp. 385-412.

- Cheng, L.-S. Lisa and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* (4): 509-542.
- Cheung, C.-H. 2007. On the noun phrase structure of Jingpo. In *USC working papers in linguistics* 3, ed. M.A. Shepherd, 32-56. University of Southern California.
- Cheung, Candice, and Li Haoze. 2012. Outer and inner modifiers: The non-uniformity of Mandarin *de* and Cantonese *ge*. Paper presented at the *International Conference on Bilingualism and Comparative Linguistics*. The Chinese University of Hong Kong.
- Cheung, Samuel Hung-nin. 1972. Xianggang Yueyu yufa de yanjiu [Cantonese as spoken in Hong Kong]. Hong Kong: The Chinese University of Hong Kong.
- Cheung, Samuel Hung-nin. 1989. Yueyu liangci yongfa de yanjiu [A study on Cantonese classifiers]. *Zhongyang Yanjiuyuan di er jie Guoji Hanxue Huiyi Lunwenji*, Taiwan.
- Chomsky, Noam. 1957. *Syntactic structures*. Berlin: Mouton de Gruyter.
- Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1970. Remarks on nominalization. In *Readings in English transformational grammar*, ed. Roderick A. Jacobs and Peter S. Rosenbaum, 184-221. Waltham, Mass.: Ginn.
- Chomsky, Noam. 1977. On wh-movement. In *Formal syntax*, ed. Peter Culicover, Thomas Wasow, and Adrian Akmajian, 71-132. New York: Academic Press.
- Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris Publications.
- Chomsky, Noam. 1986a. *Barriers*. Cambridge, Mass.: MIT Press.

- Chomsky, Noam. 1986b. *Knowledge of Language: Its Nature, Origin, and Use*. New York : Praeger.
- Chomsky, Noam. 1993. A minimalist program for linguistic theory. In *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. K. Hale and S. J. Keyser, 1-52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Cornilescu, A. 2001. Romanian Nominalizations: Case and Aspectual Structure. *Journal of Linguistics* 37: 467-501.
- Dowty, David. 1979. *Word meaning and Montague Grammar: The semantics of verbs and times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel.
- Embick, David. 2000. Syntax and Categories: Verbs and Participles in the Latin Perfect. *Linguistic Inquiry* 31: 185-230.
- Embick, David, and Rolf Noyer. 2007. Distributed Morphology and the syntax/morphology interface. In *The Oxford Handbook of Linguistic Interface*, ed. G. Ramchand and C. Reiss. Oxford: Oxford University Press.
- Fassi-Fehri, A. 2005. Verbal and Nominal Parallelisms. *Documents & Reports* 8. Rabat: Publications IERA.
- Feng, Shengli. 2010. Lun yuti de jizhi ji qi yufa shuxing [On mechanisms of register system and its grammatical property]. *Zhongguo Yuwen* (5): 400-411.
- Fillmore, C. 1968. The case for case. In *Universals in linguistic theory*, ed. E. Bach and R. Harms, 1-90. New York: Holt, Rinehart and Winson.
- Fu, Jingqi. 1994. *On deriving Chinese derived nominals: Evidence for V-to-N raising*. Ann Arbor: UMI.
- Fu, Jingqi, Thomas Roeper, and Hagit Borer. 2001. The VP within process

- nominals: Evidence from adverbs and the VP anaphor *do-so*. *Natural Language & Linguistic Theory* 19: 549-582.
- Gao, Mingkai. 1955. Guanyu hanyu de cilei fenbie [On word classification in Chinese]. In *Hanyu de Cilei Wenti* [Word Classification in Chinese]. Beijing: Zhonghua Shuju.
- Giusti, Giuliana. 1997. The categorial status of determiners. In *The new comparative syntax*, ed. L. Haegeman, 95-123. New York: Longman.
- Gragg, G. B. 1972. Sumerian and Selected Afro-Asiatic Languages. In *The Chicago which hunt*, ed. P. Perantau, J. Levi, and G. Phares, 153-168. Chicago Linguistic Society, University of Chicago.
- Grimshaw, Jane. 1990. *Argument structure*. Cambridge, Mass.: MIT Press.
- Gruber, J. 1965. *Studies in lexical relations*. Doctoral dissertation, MIT.
- Gu, Yang. 1994. Lunyuan jiegou lilun jieshao [Introduction to theories on argument structure]. *Guowai Yuyan Xue* (1): 1-11.
- Gu, Yang, and Guo Jie. 2010. On the status of the compared elements in Chinese comparatives. Paper presented at the joint meeting of IACL-18/NACCL-22, Harvard University.
- Guo, Jie. 2012. Form and Meaning: Adjectives and comparative constructions in Mandarin Chinese. *Ms.* The Chinese University of Hong Kong.
- Guo, Rui. 2002. *Xiandai hanyu cilei yanjiu* [Study on word class of modern Chinese]. Beijing: Commercial Press.
- Hale, Kenneth, and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from building 20*, ed. Kenneth Hale and Samuel Jay Keyser, 53-110. Cambridge, Mass.: MIT Press.

- Hale, Kenneth, and Samuel Jay Keyser. 2002. *Prolegomenon to a theory of argument structure*. Cambridge, Mass.: MIT Press.
- Halle, Morris, and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In *The View from Building 20*, ed. Kenneth Hale and Samuel Jay Keyser, 111-176. Cambridge, Mass.: MIT Press.
- Halle, Morris, and Alec Marantz. 1994. Some key features of Distributed Morphology. *MIT Working Papers in Linguistics* 21: 275-288.
- Harley, Heidi, and Rolf Noyer. 1998. Mixed nominalizations, short verb movement and object shift in English. In *Proceedings of NELS 28*, ed. P. N. Tamanji and K. Kusumoto. University of Massachusetts at Amherst, GLSA.
- Hazout, Ilan. 1995. Action Nominalizations and the Lexicalist Hypothesis. *Natural Language & Linguistic Theory* (3): 355-404.
- He, Yuanjian, and Wang Lingling. 2007. On nominalization in Chinese [Lun hanyu zhong de mingwuhua jiegou]. *Chinese Language Learning* (1): 13-27.
- Hu, Yushu, and Fan Xiao. 1994. Dongci xingrongci de Mingwuhua he Mingcihua [Nominalization of verbs and adjectives]. *Zhongguo Yuwen* (2):81-85.
- Huang, C.-T. James. 1982. Logical relations in Chinese and the theory of grammar. Doctoral dissertation, MIT.
- Huang, C.-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15: 531–574.
- Huang, C.-T. James, Y.-H. Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge, UK; New York: Cambridge University Press.
- Iordăchioaia, G. and E. Soare. 2008. Two Kinds of Event Plurals: Evidence from Romanian Nominalizations. In *Empirical Issues in Syntax and Semantics 7*, ed. O. Bonami and P. Cabredo-Hofherr, 1-24.

<<http://www.cssp.cnrs.fr/eiss7>>

Jackendoff, Ray S. 1972. *Semantic interpretation in generative grammar*. Cambridge, Mass.: MIT Press.

Jackendoff, Ray S. 1977. *X'-Syntax: A study of Phrase Structure*. Cambridge, Mass.: MIT Press.

Jackendoff, Ray S. 1991. Parts and boundaries. *Cognition* 41 (1-3): 9-45.

Jackendoff, Ray S. 1996. The proper treatment of measuring out, telicity, and perhaps even quantification in English. *Natural Language & Linguistic Theory* 14 (2): 305-54.

Jiang, Yan, and Pan Haihua. 1998. *Xingshi Yuyixue Yinlun* [An Introduction to Formal Semantics]. Beijing: China Social Science Press.

Katz, J. and P. Postal. 1964. *An integrated theory of linguistic descriptions*. Cambridge, Mass.: M.I.T. Press.

Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, Mass.: MIT Press.

Kenny, Anthony. 1963. *Action, emotion, and will*. London: Routledge and Kegan Paul.

Kratzer, A. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. J. Rooryck and L. Zaring, 109-137. Dordrecht: Kluwer Academic Publishers.

Larson, R. K. 1988. On the double object construction. *Linguistic Inquiry* 19: 335-391.

Leech, Geoffrey N. 1969. *Towards a semantic description of English*. London: Longmans.

Lees, Robert. 1960. *The grammar of English nominalizations*. Bloomington: Indiana University.

- Li, Jinxi. 1924/1992. *Xinzhū guoyǔ wénfǎ* [The Grammar of Chinese]. Beijing: Commercial Press.
- Li, Yen-hui Audrey. 1998. Argument determiner phrases and number phrases. *Linguistic Inquiry* 29: 693-702.
- Li, Yen-hui Audrey. 2011. *De* in Mandarin ↔ *e* in Taiwanese. *Studies in Chinese Linguistics* 33 (1): 17-40.
- Li, Y.-H. Audrey and Lu Bingfu. 2002. Shumu duanyu [On the number phrase “number + classifier + noun”]. *Zhongguo Yuwen* (4): 326-336.
- Lin, Jo-wang. 1997. Noun phrase structure in Mandarin Chinese: NP or DP? *Ms.* University of Massachusetts, Amherst.
- Lin, Tzong-Hong. 2001. Light verb syntax and the theory of phrase structure. Doctoral Dissertation.
- Lu, Jianming. 2003. Dui “NP *de* VP” jiegou de chongxin renshi [A new approach to analysis on the Chinese “NP *de* VP” construction]. *Zhongguo Yuwen* (5): 387-391.
- Lǚ, Shuxiang. 1954. Guanyu hanyu cilei de yixie yuanzexing wenti [Fundamental issues in Chinese word classification]. *Zhongguo Yuwen* (9): 6-14.
- Lǚ, Shuxiang. 1980/1999. *Xiandai hanyu babaici* [Eight hundred functional words in modern Chinese]. Beijing: Commercial Press.
- Lǚ, Shuxiang, and Zhu Dexi. 1953. *Yufa xiuci jianghua* [On grammar and rhetoric]. Beijing: Kaiming Shudian.
- Lyons, John. 1977. *Semantics* 2. Cambridge: Cambridge University Press.
- Lyons, John. 1999. *Definiteness*. Cambridge: Cambridge University Press.
- Marantz, Alec. 1993. A late note on late insertion. In *Explorations in Generative Grammar: A Festschrift for Dong-Whee Yang*, ed. Y.-S. Kim, K.-J. Lee, B.-C.

- Lee, H.-K. Yang and J.-Y. Yoon, 396–413. Seoul: Hankuk.
- Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. Paper presented at *Proceedings of the 21st Annual Penn Linguistics Colloquium* [*U. Penn Working Papers in Linguistics*], ed. A. Dimitriadis, L. Siegel, C. Surek-Clark, and A. Williams, 201-225.
- Marchand, Hans. 1964. A set of criteria for the establishing of derivational relationship between words unmarked by derivational morphemes. *Indogermanische Forschungen* 69: 10-19.
- Matthews, Stephen, and Virginia Yip. 1994/2011. *Cantonese: A Comprehensive Grammar*. London: Routledge.
- Mourelatos, A. 1978. Events, Processes and States. *Linguistics and Philosophy* (2): 415-34.
- Perlmutter, D.M. 1983. *Studies in relational grammar*. Chicago: University of Chicago Press.
- Pesetsky, David. 1995. *Zero Syntax: Experiencers and Cascades*. Cambridge, Mass: MIT Press.
- Picallo, Carme M. 1991. Nominals and nominalizations in catalan. *Probus* (3): 279-316.
- Picallo, Carme M. 2006. Some Notes on Grammatical Gender and I-Pronouns. *Proceedings of the Workshop Specificity and the Evolution / Emergence of Nominal Determination Systems in Romance*, ed. K. von Heusinger, G. A. Kaiser, and E. Stark. Fachbereich Sprachwissenschaft der Universität Konstanz, Arbeitspapier Nr. 119.
- Pollock, Jean-Yves. 1989. Verb Movement, UG and the structure of IP. *Linguistic*



*Inquiry* 20: 365–424.

Russell, B. 1904. Meinong's theory of complexes and assumptions. *Mind*: 336-354.

Pustejovsky, James. 1988. Event Semantic Structure. *Ms.*, Brandeis University.

Pustejovsky, James. 1991. The syntax of event structure. *Cognition* (41): 47-81.

Reinhart, T. 1976. The syntactic domain of anaphora. Doctoral Dissertation, MIT.

Roodenburg, J. 2006. The Role of Number within Nominal Arguments: the Case of French Pluralized Event Nominalizations. Paper presented at *Linguistics Symposium on Romance Linguistics* 36, Rutgers University.

Rothstein, Susan. 2004. *Structuring events*. Oxford: Blackwell.

Rozwadowska, B. 2006. Derived nominals. In *The Blackwell Companion to Syntax* (II), ed. Martin Everaert, Henk van Riemsdijk, 24-55. Malden, Mass.: Blackwell Pub.

Ryle, G. 1949. *The concept of mind*. London: Hutchinson.

Shen, Jiaxuan. 2009. Wo kan hanyu de cilei [My view of word classes in Chinese]. *Linguistic Sciences* 8 (1): 1-12.

Shi, Dingxu. 2008. De he de-zi jiegou [*De* and *de*-phrases]. *Contemporary Linguistics* (4): 298-307.

Shi, Guangan. 1981. “Zhe ben shu de chuban” zhong “chuban” de cixing—cong “xiangxin jiegou” lilun shuoqi [The lexical category of *chuban* in *zhe ben shu de chuban*: On endocentric constructions]. *Zhongguo Yuwen Tongxun* (4): 8-12.

Shi, Guangan. 1988. Xiandai hanyu li de xiangxin jiegou he lixin jiegou [Endocentric and exocentric constructions in Modern Chinese]. *Zhongguo Yuwen* (4): 265-273.

- Si, Fuzhen. 2004. Zhongxinyu lilun he hanyu de DeP [Head theory and *deP* in Chinese]. *Contemporary Linguistics*(6): 26-34.
- Siegel, L. 1998. Gerundive Nominals and the role of Aspect. In Proceedings of ESCOL, ed. Jennifer Austin and Aaron Lawson. Ithaca NY: CLC Publications.
- Siloni, Tal. 1997. *Noun phrases and nominalizations: The syntax of DPs*. Dordrecht: Kluwer.
- Simpson, Andrew. 2001. Definiteness agreement and the Chinese DP. *Language and Linguistics* (1): 125-156.
- Simpson, Andrew. 2002. On the status of “modifying” *de* and the structure of the Chinese DP. In *On the formal way to Chinese languages*, eds. Sze-Wing Tang, Chen-Sheng Luther Liu. Stanford, Calif: CSLI.
- Simpson, Andrew and Zoe Xiu-Zhi Wu. 2002. From D to T - Determiner Incorporation and the Creation of Tense. *Journal of East Asian Linguistics* 11: 169 - 209.
- Smith, C. S. 1991. *The parameter of aspect*. Dordrecht; Boston: Kluwer Academic Publishers.
- Szabolcsi, Anna. 1994. The Noun Phrase. In *Syntax and Semantics 27: The Syntactic Structure of Hungarian*, ed. F. Kiefer and K. É. Kiss, 179-274. San Diego: Academic Press.
- Tang, Chih-Chen Jane. 1990a. Chinese Phrases Structure and the Extended X-bar Theory. PhD Dissertation, Cornell University.
- Tang, Chih-Chen Jane. 1990b. A note on the DP analysis of Chinese noun phrase. *Linguistics* 28: 337-354.

- Tenny, Carol. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Travis, Lisa deMena. 1984. Parameters and effects of word order variation. Doctoral dissertation, MIT.
- Tsai, Wei-Tien Dylan. 2011. Rethinking formal licensing. Paper presented at *GLOW in Asia Workshop for Young Scholars*. Mie University, Japan.
- Vendler, Zeno. 1957. Verbs and times. *Philosophical Review* 66: 143–160.
- Vendler, Zeno. 1967. *Linguistics in philosophy*. Ithaca, N.Y.: Cornell University Press.
- Verkuyl, Henk. 1993. *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge: Cambridge University Press.
- Wasow, T. 1977. Transformations and the Lexicon. In *Formal Syntax*, ed. P. Culicover, T. Wasow, and J. Bresnan, 327-360. New York: Academic Press.
- Xing, Fuyi. 1981/2003. *Cilei biannan [Parts of speech in Chinese]*. Beijing: Commercial Press.
- Xiong, Zhongru. 2005. Yi de wei hexin de DP jiegou [A DP structure headed by de]. *Contemporary Linguistics* (7): 148-65.
- Yang, Jing. To appear. The interaction between between Cantonese *ge* and Classifiers. In *Monograph on the attributive particle in Chinese*. Beijing: Peking University Press.
- Yong, Shin. 1997. The Grammatical Functions of Verb Complements in Mandarin Chinese. *Linguistics* 35:1-24.
- Zhang, Bojiang. 1993. “N de V” jiegou de goucheng [On the structure of “N de V”]. *Zhongguo Yuwen [Studies of the Chinese Language]*(4): 252-259.

- Zhang, Niina. 2006. Representing specificity by the internal order of indefinites. *Linguistics* (1): 1-21.
- Zhu, Dexi. 1961. Shuo *de* [On Mandarin *de*]. *Zhongguo Yuwen* (12): 1-15.
- Zhu, Dexi. 1980. Beijing hua, Guangzhou hua, Wenshui hua, he Fuzhou hua li de “de” zi [“De” in Beijing, Guangzhou, Wenshui, and Fuzhou dialects]. *Fangyan* 3: 161-165.
- Zhu, Dexi. 1982. *Yufa jiangyi* [Lecture notes on grammar]. Beijing: Commercial Press.
- Zhu, Dexi. 1983. Zizhi and zhuanzhi [Self-referring and other referring]. *Fangyan* (1): 16-31.
- Zhu, Dexi. 1984. Guanyu xiangxin jiegou de dingyi [On the definition of endocentric constructions]. *Zhongguo Yuwen* (6): 401-3.
- Zhu, Dexi. 1985a. *Yufa da wen* [Q and A on Chinese grammar]. Beijing: Commercial Press.
- Zhu, Dexi. 1985b. Xiandai shumian hanyu li de xuhua dongci he mingdongci [Weak verbs and gerundive nominals in formal Modern Chinese]. *Journal of Peking University* (5):1-6.
- Zucchi, Alessandro. 1993. *The language of propositions and events: Issues in the syntax and the semantics of nominalization*. Dordrecht; Boston: Kluwer Academic Publishers.
- Zwart, Jan-Wouter. 1997. *Morphosyntax of verb movement: A minimalist approach to the syntax of Dutch*. Dordrecht: Kluwer Academic Publishers.